RGC Ref. No.:
UGC/FDS16/H11/21
(please insert ref. above)

RESEARCH GRANTS COUNCIL
COMPETITIVE RESEARCH FUNDING SCHEMES FOR
THE LOCAL SELF-FINANCING DEGREE SECTOR

FACULTY DEVELOPMENT SCHEME (FDS)

Completion Report
(for completed projects only)

Submission Deadlines:	*1. Auditor's report with unspent balance, if any: within **six** months of the approved project completion date.*
	*2. Completion report: within **12** months of the approved project completion date.*

Part A: The Project and Investigator(s)

1. **Project Title**

    Depression in high ability adolescents: A cross-cultural study

2. **Investigator(s) and Academic Department(s) / Unit(s) Involved**

Research Team	Name / Post	Unit / Department / Institution
Principal Investigator	Dr LI Tze-kwan/ Senior Lecturer	Department of Social Sciences/ School of Arts & Social Sciences/ Hong Kong Metropolitan University
Co-Investigator(s)	Prof. CHAN Stella W.Y./ Professor	School of Psychology & Clinical Language Sciences/ University of Reading
	Prof. WILLIAMS Joanna/ Professor	Applied Developmental Psychology/ University of Edinburgh
	Prof. SIN Kuen-fung/ Professor	Department of Special Education and Counselling/ The Education University of Hong Kong
	Prof. YU Hsiao-ping/ Professor	Department of Special Education/ National Taiwan Normal University
	Dr Marjolijn van WEERDENBURG/ Assistant Professor	Behavioural Science Institute/ Radboud University

	Dr JEN Enyi/ Lecturer	Radboud Center for Social Sciences/ Radboud University
	Dr HOOGEVEEN Lianne/ Professor and President	European Council for High Ability
	Dr CHEUNG Ho-nam / Assistant Professor	Department of Social Work and Social Administration/ University of Hong Kong
Others		

3. Project Duration

	Original	**Revised**	**Date of RGC / Institution Approval** *(must be quoted)*
Project Start Date	1/1/2022		
Project Completion Date	31/12/2023		
Duration *(in month)*	24		
Deadline for Submission of Completion Report	31/12/2024		

4.4 Please attach photo(s) of acknowledgement of RGC-funded facilities / equipment. NA

Part B: The Final Report

5. Project Objectives

5.1 Objectives as per original application

1. To compare the severity and symptom presentation between intellectually high ability and non-intellectual high ability adolescents with depression across the four regions of Hong Kong, Taiwan, Netherlands, and the UK

2. To examine gender differences in depression symptom profile among depressed intellectually high ability adolescents across the four regions.

3. *T*o compare cross-culturally on the severity of depression in high ability adolescents with high achievement and underachieving high ability adolescents across the four regions.

4. To study the symptom profile of depression based on cultures, genders, intellectual ability, academic achievement and the possible mediating effect of age, pubertal timing and perfectionism.

5.2   Revised objectives

   Date of approval from the RGC: _____

   Reasons for the change: _____

   _____

   _____

   1.

   2.

   3. ....

5.3   Realisation of the objectives
       (Maximum 1 page; please state how and to what extent the project objectives have been achieved; give reasons for under-achievements and outline attempts to overcome problems, if any)

In our project, we screened 4,000 adolescents aged 12-18 across Hong Kong, Taiwan, the UK, and the Netherlands. Among them, 1,180 were identified as high-ability students using a holistic definition based on their membership in gifted programs. In our previous budget virement, we got approval to adapt a holistic approach in screening for high-ability adolescents using gifted membership instead of IQ test due to COVID lockdown. However, this new approach shields light on the Up analysis of the data we found the unprecedented subtype of the high ability adolescents and categorized these high-ability students into four distinct profiles using latent profile analysis:

1. Autonomous: Exhibits high autonomy with uniformly high scores across all assessed variable
2. Hiding High-Ability: Characterized by uniformly low scores, indicating a concealment of potential.
3. Self-Satisfied: Notably low in self-criticism but high in other metrics, demonstrating a unique complacency.
4. Maladaptively Perfectionistic: Defined by high levels of perfectionism and self-criticism, coupled with low creativity, academic self-efficacy, and self-regulation.

Our findings revealed a significant cultural effect within these profiles. Notably, 70% of the students in the Maladaptively Perfectionistic profile (Profile 4) were from Western regions, while 70% of Asian high-ability students belonged to the other profiles (Profiles 1-3).

Aim 1-4:
We ran measurement invariance across the four areas and genders did not detect any differences in terms of symptom pattern across the four areas. The finding aligns with the current literature that there were no significant differences in depression levels between high-ability and non-high-ability adolescents. Analyzing the patterns of depressive symptoms, we found that both high-ability and non-high-ability students commonly experienced the central interpersonal symptom of feeling like a burden on others (Cheung et al., 2024).

In terms of gender difference, depressed high-ability participants showed higher level of depression than non-depressed high ability participants.

However, further analysis suggested that participants with Profile 4 (Maladaptive perfectionists) had the highest level of self-perception of underachievement which was linked to poorer performance in core subjects such as language, science, and mathematics (Cheung et al., in preparation). And were found to have the highest level of depression. The finding aligns with existing finding from meta-analysis studies such as those by Duplenne et al. (2023) concluded that gifted and non-gifted individuals do not differ in depression and giftedness is not a determinant of depression. This unexpected finding suggests that the psychological subtype and perception of underachievement might be a more useful predictor of depression than cultural factors and solely intellectual ability. Further papers in the insight of the mechanism are under preparation.

These results highlight the cultural nuances and emotional challenges associated with the Maladaptively Perfectionistic profile, emphasizing the need for targeted support strategies that address perfectionism and self-critical tendencies, particularly among high-ability students in Western contexts.

5.4 Summary of objectives addressed to date

Objectives *(as per 5.1/5.2 above)*	Addressed *(please tick)*	Percentage Achieved *(please estimate)*
1. To compare the severity and symptom presentation between intellectually high ability and non-intellectual	v	100%

high ability adolescents with depression across the four regions of Hong Kong, Taiwan, Netherlands, and the UK		
2. To examine gender differences in depression symptom profile among depressed intellectually high ability adolescents across the four regions.	v	100%
3. To compare cross-culturally on the severity of depression in high ability adolescents with high achievement and underachieving high ability adolescents across the four regions.	v	100%
4. To study the symptom profile of depression based on cultures, genders, intellectual ability, academic achievement and the possible mediating effect of age, pubertal timing and perfectionism.	v	100%

6. Research Outcome

6.1 Major findings and research outcome
(Maximum 1 page; please make reference to Part C where necessary)

In our study, we did not discover a significant difference in depression severity between high-ability and non-high-ability adolescents. Notably, the central interpersonal symptom identified on the MDAS (Multidimensional Depression Assessment Scale) was "feeling a burden on others" (Cheung et al., 2024). Contrary to our original hypothesis—which treated high-ability students as a homogeneous group—we found that high-ability adolescents are heterogeneous, comprising distinct subtypes based on their psychological traits.

Pioneering this approach, we restructured high-ability adolescents into subgroups informed by theories of underachievement. Our analysis revealed that these subtypes have unique cultural and gender linkages to depression, influenced by the interplay of their psychological characteristics. Interestingly, the same profiles were identified across different cultures and genders, indicating a level of consistency in these subtypes.

Among the subtypes, high-ability adolescents in Profile 4—the Maladaptively Perfectionistic group—exhibited the highest levels of depression across all four subdomains: emotional, cognitive, somatic, and interpersonal. Profile 2—the Hiding High-Ability group—had the second-highest levels of depression, while Profile 3—the Self-Satisfied group—showed the lowest levels of depressive symptoms. These differences were statistically significant ($p < 0.001$).

These findings suggest that not all high-ability students experience depression uniformly; instead, specific psychological profiles are associated with varying degrees of depressive symptoms. Our results highlight the importance of recognizing the diversity within high-ability populations, particularly concerning mental health.
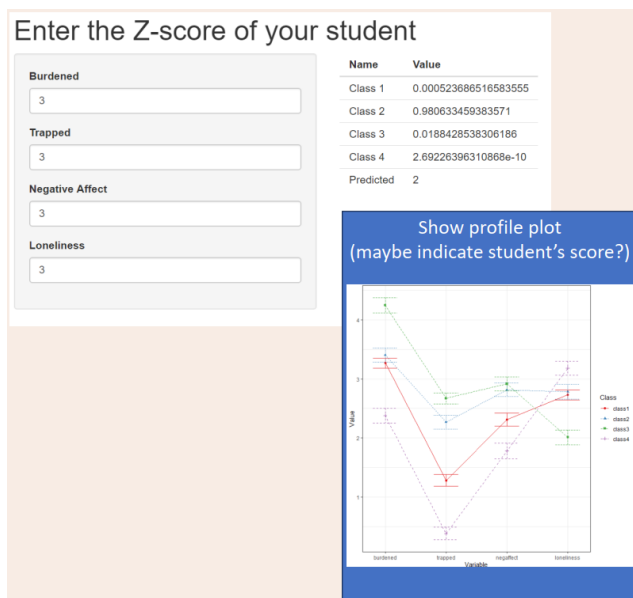
The study's outcomes were presented at the Asian Pacific Conference on Giftedness, and a detailed paper is currently under review with the *Psychology in the Schools*. This research advances our understanding of high-ability adolescents by emphasizing the need to consider psychological subtypes when addressing underachievement and mental health issues.

6.2 Potential for further development of the research and the proposed course of action
(Maximum half a page)

Based on the current empirical findings of the study, two future projects are in development. First one delves into the detailed mechanism of psychological subtypes of high ability adolescents and their emotional regulation, self-compassion related to depression and how it predicts future achievement. The project is under review with UGC.

The second project develops a prototype of early identification of potential underachievers and their mental health impact using the psychological subtypes from the study. An R shiny app is under development (as illustrated in the photo) for students and educators. It has attracted interest from funders such as 3HK and Oxfam and is currently in the proposal development stage.

Enter the Z-score of your student

Burdened

3

Trapped

3

Negative Affect

3

Loneliness

3

Name	Value
Class 1	0.000523686516583555
Class 2	0.980633459383571
Class 3	0.0188428538306186
Class 4	2.69226396310868e-10
Predicted	2

Show profile plot
(maybe indicate student's score?)

7. Layman's Summary

(Describe <u>in layman's language</u> the nature, significance and value of the research project, in no more than 200 words)

In a comprehensive study of 4,000 adolescents aged 12-18 from Hong Kong, Taiwan, the UK, and the Netherlands, we identified 1,180 high-ability students through their enrollment in gifted programs, bypassing traditional IQ tests for a novel screening method that could inform future educational research and policy.

We categorized these students into four distinct profiles using latent profile analysis:
1. Autonomous: Highly independent, excelling in all metrics.
2. Hiding High-Ability: Conceal their potential, with uniformly low scores.
3. Self-Satisfied: Low in self-criticism, high in other areas.
4.Maladaptively Perfectionistic: Struggle with high perfectionism and self-criticism, low in creativity and academic self-efficacy.

Significant cultural differences emerged, with 70% of the Maladaptively Perfectionistic profile from Western regions and the majority of Asian high-ability students in the other profiles, underscoring cultural influences on developmental trajectories.

Despite no overall differences in depressive symptoms between high-ability and non-high-ability students or across genders, Maladaptively Perfectionistic students showed higher perceived underachievement and poorer performance in core subjects, linked to increased depression levels.

These findings highlight the need for targeted support for high-ability students, particularly those with perfectionistic tendencies, suggesting that educational policies and mental health interventions should be sensitive to both abilities and cultural backgrounds.

Part C: Research Output

8.   Peer-Reviewed Journal Publication(s) Arising <u>Directly</u> From This Research Project
(Please attach a copy of the publication and/or the letter of acceptance if not yet submitted in the previous progress report(s). All listed publications must acknowledge RGC's funding support by quoting the specific grant reference.)

The Latest Status of Publications				Author(s) *(denote the corresponding author with an asterisk*)*	Title and Journal / Book *(with the volume, pages and other necessary publishing details specified)*	Submitted to RGC *(indicate the year ending of the relevant progress report)*	Attached to this Report *(Yes or No)*	Acknowledged the Support of RGC *(Yes or No)*	Accessible from the Institutional Repository *(Yes or No)*
Year of Publication	Year of Acceptance *(For paper accepted but not yet published)*	Under Review	Under Preparation *(optional)*						
2024				**Cheung, H. N*.**, Asgarabad, M. H., Ho, W. S., Zibetti, M. R., Li, S. T. K., Stella, W. Y. C., & Williams, J. M.	Interpersonal symptoms in adolescence depression across Asian and European regions: a network approach/ *BMC Psychiatry*	No	**Yes** [Attachment 1]	**Yes**	**Yes (open access)**
		✔		Lo, T. T., Weerdenburg, M., Williams, J. M., Jen, E., Hoogeveen, L., Chan, W. Y., Sin, K.F. & **Cheung, H. N.**	Underachievement Risks and Profiles of Psychological Variables Among High-Ability Adolescents: A Cross-Cultural Study / *Psychology in the Schools*	No	**Yes** [Attachment 2 and 3]	**Yes**	**Yes**
			✔	X. Y. Wei., Lo, T. T., Weerdenburg, M., Hoogeveen, L., Chan, W. Y., Williams, J. M., & **Cheung, H. N.**	High ability profiles across gender and their connection of underachievement and depression	No	**No**	**Yes**	**Yes**
			✔	**Cheung, H. N.**, Williams, J. & Chan, W. Y. Stella	Self-coldness, depression and underachievement: A cross-cultural study.	No	**No**	**Yes**	**Yes**

9. **Recognized International Conference(s) In Which Paper(s) Related To This Research Project Was / Were Delivered**
   (Please attach a copy of each conference abstract)

Month / Year / Place	Title	Conference Name	Submitted to RGC *(indicate the year ending of the relevant progress report)*	Attached to this Report *(Yes or No)*	Acknowledged the Support of RGC *(Yes or No)*	Accessible from the Institutional Repository *(Yes or No)*
August/ 2024/ Takamatsu, Japan	Underachievement Risks and Profiles of Dispositions Among High Ability Students: A Cross-Cultural Study	The 18th Asian Pacific Conference on Giftedness (APCG 2024)	No	Yes [Attachment 4, 5 & 6]	Yes	Yes

10. **Whether Research Experience And New Knowledge Has Been Transferred / Has Contributed To Teaching And Learning**
    (Please elaborate)
    We created an R shiny app prototype for each subtype to predict the risk of underachievement. The app is presented in APCG 2024 and it attracts interest from 3HK, Oxfam to further fund its development. Also we disseminated the result through teaching, training to secondary school teachers to enhance their awareness and through conference presentations.

11. **Student(s) Trained**
    (Please attach a copy of the title page of the thesis)

Name	Degree Registered for	Date of Registration	Date of Thesis Submission / Graduation
NA	NA	NA	NA

12. Other Impact
(e.g. award of patents or prizes, collaboration with other research institutions, technology transfer, teaching enhancement, etc.)

NA

13. Statistics on Research Outputs

	Peer-reviewed Journal Publications	Conference Papers	Scholarly Books, Monographs and Chapters	Patents Awarded	Other Research Outputs (please specify)	
No. of outputs arising directly from this research project	1 published + 1 under review + 2 under preparation	1			Type	No.

14. Public Access Of Completion Report
(Please specify the information, if any, that cannot be provided for public access and give the reasons.)

Information that Cannot Be Provided for Public Access	Reasons
NA	NA