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Enhancing adolescent mental health through positive education.

**A Longitudinal Evaluation of
Year 10 Positive Education:
Findings from 2014 to 2016**

2017

Citation

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Executive Summary

This current study is one component of a more comprehensive research project examining the effects of positive education on student well-being, biological and psychophysiological health and academic engagement and performance. This report will focus on the evaluation of the Year 10 Positive Education Program (PEP) in both Independent and Public Schools, and compared with usual well-being programs, using survey data.

Key Messages:

- It is important for evaluations to capture the multidimensional aspects of well-being, and to examine both the global domain level and specific variable levels for rich insights.
- When comparing schools and their implemented well-being programs, it is necessary to understand the program content. There are similar concepts across a range of well-being frameworks and programs, although many use different labels. It is therefore important to consider the content delivered to students, the frequency and duration of sessions, as well as resources and training provided to support the program implementation.
- Positive Education has been demonstrated to produce positive change in some aspects of well-being, with results being most pronounced in public schools.
- There is scope to develop topics and activities that address psychological ill health issues using a strengths-based approach, particularly given the heightened levels of anxiety and depression identified in secondary school students.
- Teachers and students have different perspectives about the perceived life challenges of Year 10 students and this highlights the importance of including students during the program development phase.
- Targeted Positive Education sessions may be as effective as more extensive programs however pre-intervention levels of mental health and well-being need to be considered as there is greater scope for improvement for students whose baseline levels are lower than for those who report higher levels of psychological functioning.



Implications:

The current empirical study offers a range of implications for educators, researchers, and the broader community. Some of these are now listed:

- Based on these study findings, the Year 10 GGS PEP is helpful if the primary objective is to improve well-being, rather than to alleviate symptoms of anxiety and depression.
- Obtaining student perspectives about their current needs and their feedback of the PEP, and promoting co-creation of materials and activities will help to develop a youth-friendly program that is engaging and practical. Regular monitoring and program revisions are necessary if current student needs are to be addressed.
- Although there are some beneficial outcomes at the 6 and 12 month post-program time points, further work is needed to determine the sustainability and durability of effects of the PEP, particularly during the post-school transitional period. Regular delivery of positive education, and/or delivery at critical points, may be necessary for sustained effects.
- Preliminary findings generally support the delivery of Year 10 Positive Education in public schools despite shorter lessons and significantly fewer lessons across the year compared with the PEP delivery by independent schools such as GGS.



Recommendations:

- Promote student and teacher contributions and insights to ascertain current needs and corresponding goals.
- Schools need to consider addressing anxiety and depression issues using a strengths framework – perhaps more explicit content around managing psychological illness is needed. Consider including school psychologists in the development and delivery of this content, via a PEP.
- PEP has merit in both independent and public secondary schools where some beneficial effects have been found. However, delivering fewer topics, but highly relevant ones, over shorter periods may be more effective than a comprehensive year long program (dosage and content variation warrants further examination).
- A cost-benefit analysis should be undertaken as more data are gathered across studies to ensure that student and school resources are utilised to optimal effect and any positive outcomes are maintained.
- Ensure that program follow-up at least 6 months post-program occurs and consider booster PEP sessions at the 6-12 month post-program time point.
- Consider collecting information about key processes that may influence program implementation in schools (e.g., level of teacher training, number of sessions, content delivered)
- Consider selecting program components based on a needs analysis specific to the school context



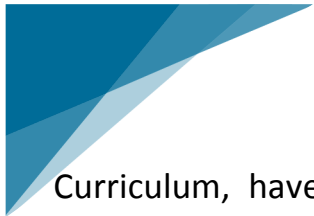
Introduction

Project Background

The vision for all Australians to experience better health and well-being constitutes a national priority¹. The aim is to not only reduce mental illness but to foster optimal functioning and flourishing. The potential for future generations to achieve this goal is, however, challenged by dismal statistics about the current state of adolescent mental health. Reports estimate that 1 in 5 Australians aged 15-17 experience high levels of psychological distress indicative of mental illness², and approximately 1 in 7 individuals between 12-17 years report suffering from a mental disorder in the past year³. The health of adolescents is also implicated by social issues such as the prevalence of alcohol- or drug-related violence, risky drinking practices, and victimisation^{4,5}. Bullying, for instance, affects 1 in 4 young people, and victims of such behaviour face an increased risk of psychological ill health⁵. These statistics are further complicated by the finding that those who would benefit from mental health services tend not to seek professional help⁶. Thus, cultivating positive mental health and well-being among adolescents warrants central attention.

Given that most young people have access to schools, they are adequately placed to deliver mental health initiatives that address youth psychopathology while enabling adolescents to thrive. One prominent initiative is Positive Education, a strengths-based approach that combines knowledge from Positive Psychology with best-practice teaching to encourage flourishing within students and school communities⁷. Positive Education is exemplified in Geelong Grammar School's (GGS) applied educational framework, which describes well-being as spanning six core domains – Positive Emotions, Positive Engagement, Positive Accomplishment, Positive Purpose, Positive Relationships, and Positive Health – through which a common emphasis is placed on building character strengths. As well-being lies at the heart of Positive Education, two key concerns to educators, policy makers, and parents alike are questions about its effects and whether Positive Education can be improved for heightened beneficial outcomes.

Previously implemented positive education programs (PEPs), such as the Penn Resiliency Program, have demonstrated promising efficacy in reducing anxious and depressive symptoms⁸, while others, such as the Strath Haven Positive Psychology



Curriculum, have been found to improve social skills, academic outcomes, and school engagement among participating students⁹. Although promising, not all positive psychology programs have produced consistent results or have had a similar degree of impact on youth well-being^{10, 11, 12}. Effects of resilience programs, for example, have shown to vary in strength and direction¹³, and several studies examining the Penn Resiliency Program did not find significant differences between intervention and control participants on measures of depression¹⁴. A recent systematic review and meta-analysis of Penn Resiliency Programs (and adaptations thereof) found no evidence to support reductions in anxiety and depression, and no improvements in explanatory style of positive or negative events¹⁵. Hence, the well-being outcomes that flow from engagement in PEPs as well as their underlying mechanisms still need to be clarified.

Variation in program delivery and characteristics of the programs' recipients are possible explanations for why differences in PEP outcomes occur. Studies evaluating the Penn Resiliency Program tended to report better intervention outcomes when program providers were trained community or research team members¹³, and positive psychology programs were found to produce greater gains in well-being when delivered over longer, rather than shorter, durations^{16, 17}. Another factor that may affect the success of PEPs is the level of well-being reported at baseline, that is, prior to participants completing the PEP. Previous research suggests that the scope for improvements in well-being is greatest for depressed individuals¹⁶ and for those with initially lower levels of positive affect¹⁰. Based on these findings, the success of PEPs would not solely depend on the direct effects of program content but also on the indirect effects of underlying mechanisms, such as those associated with program implementation and participant attributes. A 'best practice' PEP should thus adhere to high standards of program delivery, fidelity, and consider student characteristics when implemented in different school contexts in order to maximise the benefits of Positive Education for all students.

Sufficiently-resourced schools that are committed to the goal of well-being and able to expend the resources necessary to ensure quality program delivery would be well positioned to deliver best-practice PEPs. Geelong Grammar School (GGS) is an exemplar case in point; GGS is a non-government, co-educational, and high socio-economic status school in Australia with a leading reputation in the provision of school-wide Positive Education. The Year 10 PEP at GGS is an opportune case study to evaluate the effects of a best-practice PEP on student well-being in a real-world context. Year 10 PEP students are exposed to a breadth of evidence-based positive education topics and activities over the



academic year, which are taught by extensively trained teaching staff. Importantly, evaluating a best-practice PEP, such as GGS' Year 10 PEP, would allow us to clarify the overall impact of PEPs on student well-being and the active mechanisms underlying their success, thereby enabling some of the pressing questions about the effects and effectiveness of Positive Education to be better understood and addressed in future work.

Besides the overall effects of PEPs, an equally important and practical question concerns the generalizability of well-being outcomes to private and public schools. Government funding among Australian public schools is becoming increasingly limited¹⁸, and there appears to be a consistent trend for public school students to score lower on academic tests than do their private school peers^{19, 20}. According to a 2012 nationally representative household survey of over 15,000 Australians, marked differences in academic, social, and emotional student well-being can be observed across school type (i.e., government, catholic, and other non-government)²¹; rates of subjectively reported quality of education, academic achievement, and likelihood of participating in tertiary education were highest for children in non-Catholic non-government schools, and lowest for those in government schools. Among high school students, experiences of bullying were reported by approximately 22% of government school students, compared with 15% of Catholic school students and only 11% of students in other non-government schools. Government school students also tended to worry more about bullying than those in non-government schools, according to the report. Together, these findings suggest that student well-being differs across school type and invites consideration of the way well-being interventions operate in a public school context. Given that government schools in Australia continue to educate the greatest proportion of youth today²², it is critical to understand whether students in public school systems can effectively acquire and apply the knowledge learnt from best-practice PEPs, such as GGS' Year 10 PEP, and subsequently experience greater well-being.

In sum, Positive Education captures the value of investing in mental health initiatives capable of preventing mental illness and promoting flourishing in young people's lives. In light of the problematic state of adolescent mental health today, along with the potential for schools to intervene early and effectively to address such problems, it is important to understand the effects of PEPs on student well-being in public and private schools and the specific mechanisms underpinning these effects.



Research Aims and Questions

The purpose of this report is to present the findings of a longitudinal evaluation of GGS' Year 10 PEP on the mental health and well-being of students from GGS and best-matched comparison schools, as well as the generalisability of modified PEPs to meet the specific needs of Year 10 students from public schools.

The key research questions guiding the longitudinal 3-year evaluation were:

1. What factors are important for student well-being?
2. Do Year 10 GGS students experience positive changes from the year-long PEP?
 - 2.1 How do these findings compare with the comparison school student group?
 - 2.2 Are the changes sustained over time?
3. Which components of the GGS PEP are suitable for implementation in public schools?
4. Do Year 10 PEP students in participating public schools experience changes in student functioning and well-being from an adapted GGS PEP as compared to control peers from the same school?

Who was assessed?

Phase 1 from 2014 to 2016: Independent Schools

Year 10 students at Geelong Grammar School (GGS) and two best-matched comparison schools were recruited and assessed across four time-points, pre- and post-program in 2014, 6-month and 12-month follow-up (see Figure 1 for a summary of participant numbers for each study time-point). A third best-matched comparison school was recruited mid-way through 2014 to balance the female to male ratio of participants. An attempt was made to recruit students from independent schools, with a combination of boarding, co-educational, urban and rural campuses, to enable a comparison of well-being outcomes with students of similar socioeconomic demographics to GGS. Nonetheless, all comparisons must be interpreted with caution given there will always be differences between GGS and comparison schools that are not possible to control.

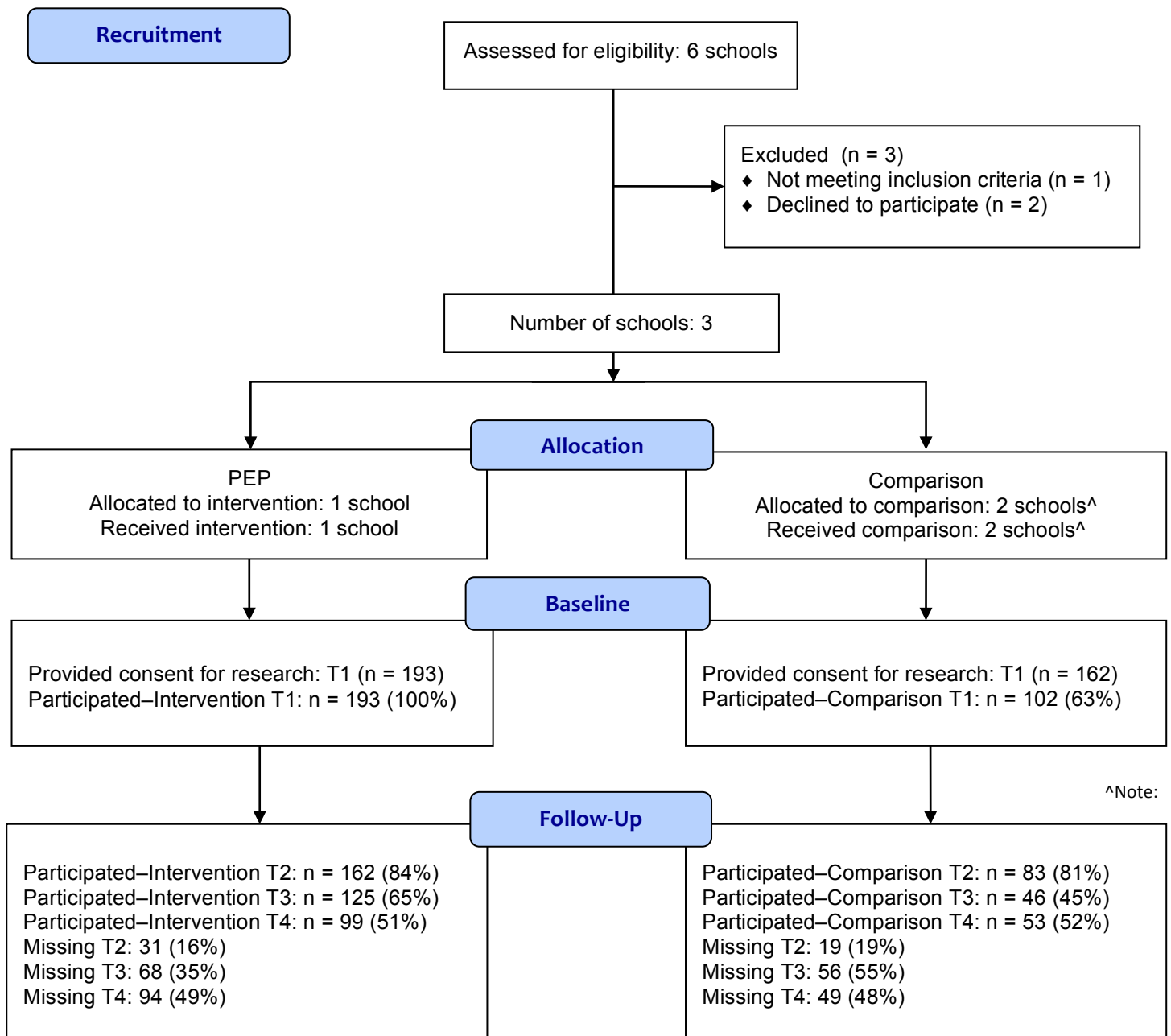
Details of Phase 1 participants included for analyses across both GGS and comparison schools are shown in Table 1. Based on the Index of Community Socio-Educational Advantage (ICSEA) in 2014, all of the participating schools had similar school distribution, with ICSEA values within the range of 1110 to 1156 (ICSEA_{median}: 1000; ICSEA_{SD}: 100).

Table 1:

Demographic characteristics of participants from Geelong Grammar School and best-matched comparison schools. (SD=Standard Deviation)

Survey only	Number of participants	Proportion of year level participating in research	Gender		Age		Country of birth (% Australia)
			Male	Female	Mean	SD	
Geelong Grammar School Students	Total 162						
Year 10	162	84%	85	77	15.09	0.59	83%
Comparison Group students	Total 135						
School 1 Year 10	39	75%	23	16	15.21	0.57	82%
School 2 Year 10	44	40%	44	0	15.18	0.39	80%
School 3 Year 10	52	43%	0	52	15.58	0.54	90%

Flow of participants through Phase 1 (Independent Schools) of study



Two schools were originally recruited as comparison schools, data from school 3 not included in flow diagram as school 3 was recruited mid-way through 2014 to balance the female to male ratio of comparison group participants.

Figure 1. Flow diagram of Phase 1 participants.

Table 2:

Overview of PEP and Comparison Group program content delivered across participating independent schools

	PEP	Comparison Group (School 1)	Comparison Group (School 2)
Framework:	Geelong Grammar School Model for Positive Education⁷: - Positive emotions - Positive engagement - Positive purpose - Positive relationship - Positive accomplishment - Positive health	PROSPER²³: - Positivity - Relationships - Outcomes - Strengths - Purpose - Engagement - Resilience Leadership Program: Communication; conflict resolution; ethical leadership; teamwork; attitude; meaningful life Positive Coaching: In tutor sessions	Five Domains of Positive Functioning²⁴: - Attention and Awareness - Comprehension and Coping - Emotions - Goals and Habits - Virtues and Relationships
Program commencement:	2011	2015	2015
Frequency of class:	Weekly	Weekly	Fortnightly
Duration of class:	90 minutes	60 minutes	50 minutes
Program topics:	What is flourishing?	Flourishing	Exploring flourishing from PERMA perspective and Corey Keyes' mental health and mental illness continuum
	Exploring character strengths	PROSPER – Character strengths	Character strengths (mentor groups)
	Using your strengths	Signature strengths	Using your strengths as part of Strengths program (mentor groups)
	Spotting character strengths	Identifying top 5 and supporting strengths	Spotting strengths as part of Strengths program (mentor groups)
	Developing a growth mindset	Developing a growth mindset (in tutor period with vertical groups from Years 9 to 12)	
	Training your brain		
	Exploring resilience	PROSPER – Resilience	Adapted version of PENN Resilience Program and ACT-based resilience program
	Thinking flexibly		
	Building strong relationships – in good times	PROSPER – Relationships	Social relationships
	Building strong relationships – in bad times		
	Igniting your passion		
	Exploring meaning and purpose in life	PROSPER – Purpose	
	Understanding positivity	PROSPER – Positive emotions	
	Encouraging gratitude		
	Nurturing hope and optimism	Leadership: Leading in life	Goal setting activities (during mentor groups)

Note: Two schools were originally recruited as comparison schools, school 3 was recruited mid-way through 2014 to balance the female to male ratio of comparison group participants and indicated that they do not utilise any particular well-being framework.

Even though the Comparison Group schools indicated that Positive Education was not explicitly taught to the participating Year 10 students in 2014, there were similar topics and/or learning objectives in their well-being as usual program. Similar concepts such as flourishing, character strengths, resilience and relationships were covered across all schools.

Phase 2 from 2015 to 2016: Public Schools

Year 10 students from two Victorian public schools were recruited and quasi-randomly allocated based on class groups to either Positive Education Program (PEP) or Well-being As Usual (WBAU) classes, and assessed across three time-points, pre- and post-program in 2015, and 6-month follow-up in 2016. An attempt was made to recruit students from public schools, with similar socioeconomic demographics.

Demographic characteristics of Phase 2 participants across both public schools are shown in Table 3. Both groups at baseline had approximately similar male to female ratio (PEP: 58% female; WBAU: 59% female). Based on the Index of Community Socio-Educational Advantage (ICSEA) in 2015, both participating schools had similar school distribution, with ICSEA values within the range of 985 to 1040 (ICSEA_{median}: 1000; ICSEA_{SD}: 100).

Table 3:

Demographic characteristics of participants from two participating Victorian public schools.

Survey only	Number of participants	Proportion of year level participating in research	Gender		Age		Country of birth (% Australia)
			Male	Female	Mean	SD^	
Positive Education Program Students		Total 100					
School 1 Year 10	58	28%	24	34	15.22	0.84	84%
School 2 Year 10	42	27%	18	24	15.26	0.73	88%
Well-being As Usual Students		Total 182					
School 1 Year 10	147	70%	61	86	15.45	0.85	81%
School 2 Year 10	35	22%	14	21	15.23	0.49	87%

[^]SD=Standard Deviation

Flow of participants through Phase 2 (Public Schools) of study

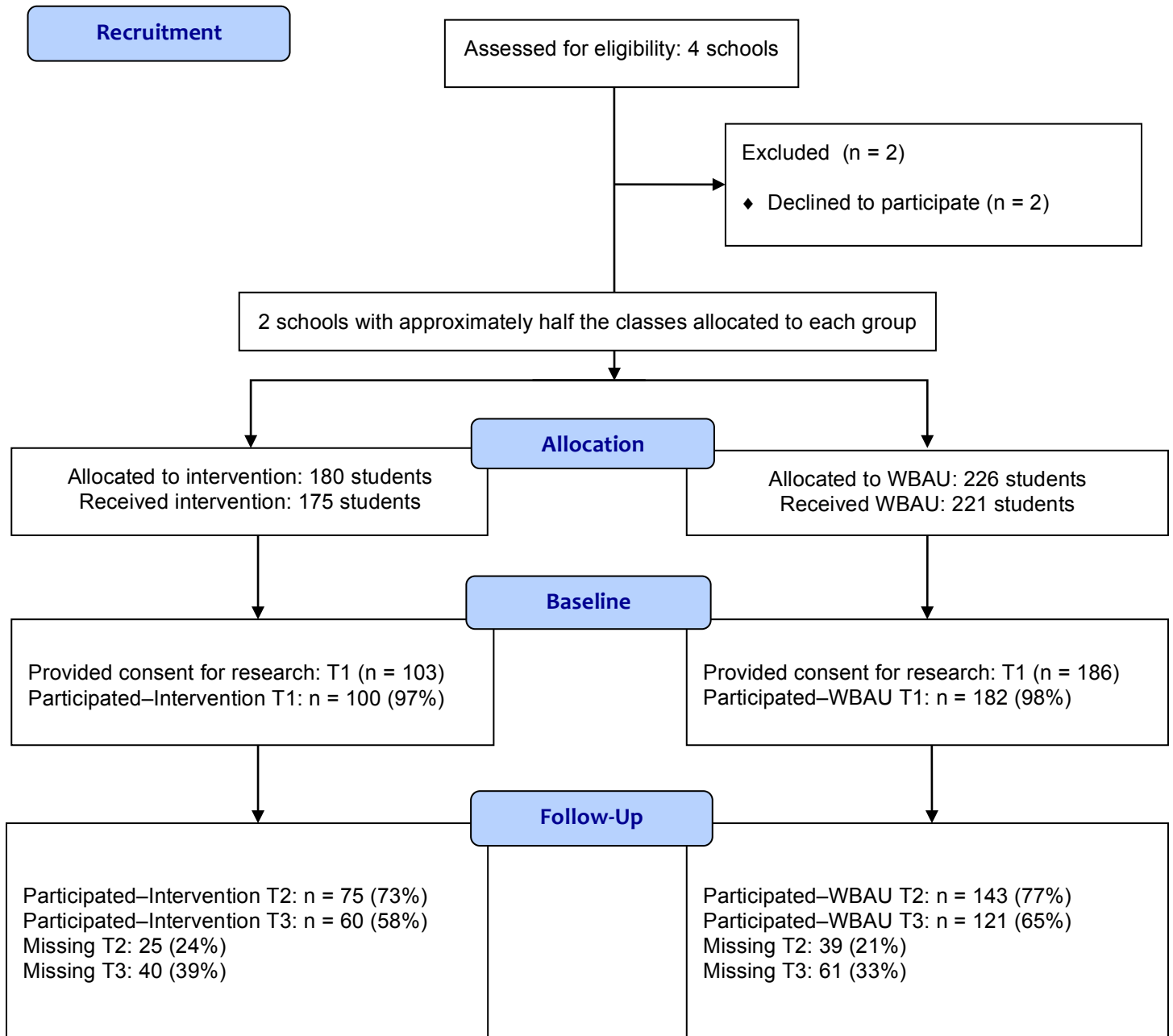
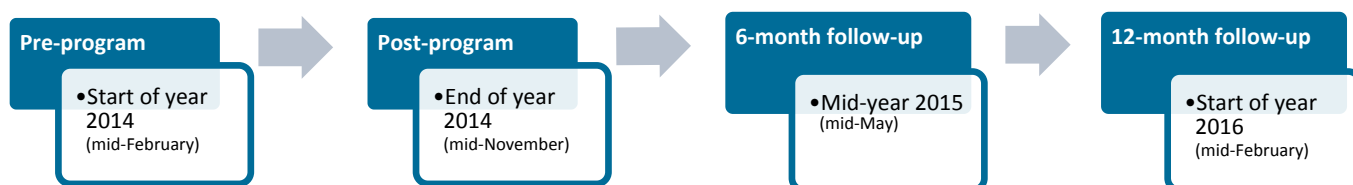


Figure 2. Flow diagram of Phase 2 participants.

When were they assessed?

Phase 1 from 2014 to 2016: Independent Schools



Phase 2 from 2015 to 2016: Public Schools



How were they assessed?

Measures:

- Survey of psychological questionnaires (see Table 4) at each of the above time-points.

Handling of missing data:

- Multiple Imputation was used to create five complete data sets following recommendations^{25, 26} for multiple imputation of missing data. For each missing value, five possible values were generated using multiple linear regression.

Statistical techniques included:

- Descriptive analyses (pooled mean values from the five data sets created, frequencies)
- Factor analyses to derive higher order indices and risk factors of well-being
- Multivariate analyses were conducted in three ways:
 - Using all participants with baseline data for all the variables measured;
 - Analyses were restricted to those participants with complete data at baseline and 12-month follow-up;
 - Using five complete data sets generated using Multiple Imputation of missing data.
- Multivariate analysis of variance (MANOVA), with time (pre-; post-program; 6-m and 12-m follow-up) a repeated factor, and group (PEP vs Comparison) an independent factor. Experiment-wise error rate was set at $\alpha = .05$ for the analyses. Overall results are presented graphically within the body of this report, and full descriptive and inferential statistics, including effect sizes, are presented in the Appendices.

What was assessed?

The self-report survey battery comprised of mental health and well-being indicators, as well as a selection of key variables related to various aspects of well-being.

Table 4:
Details of survey measures.

Psychological Well-Being & Ill Health Indicators		
Component	Measure	Description
Mental well-being	Short Warwick-Edinburgh Mental Well-being Scale	7-item measure of mental well-being - Rated on a 5-point scale from "None of the time" to "All of the time"
Satisfaction with life	Students' Life Satisfaction Scale	7-item measure of global satisfaction in children - Rated on a 6-point scale from "Strongly disagree" to "Strongly agree"
Mental health	Patient Health Questionnaire	4-item measure of anxiety and depression symptoms - Rated on a 4-point scale from "Not at all" to "Nearly every day"
Strengths	Strength Knowledge & Strength Use	12-item measure of strength knowledge and strength use - Rated on a 7-point scale from "Strongly disagree" to "Strongly agree"
Resilience	Connor-Davidson Resilience Scale	10-item measure of resilience - Rated on a 5-point scale from "Not true at all" to "True nearly all the time"
Hope	Children's Hope Scale	6-item measure of hope in children - Rated on a 6-point scale from "None of the time" to "All of the time"
Mindfulness	Mindful Attention Awareness Scale	14-item measure of dispositional mindfulness - Rated on a 6-point scale from "Almost never" to "Almost always"
Gratitude	Gratitude Questionnaire	6-item measure of gratitude - Rated on a 7-point scale from "Strongly disagree" to "Strongly agree"
Mindset	Mindset Questionnaire	6-item measure of fixed and growth mindsets - Rated on a 7-point scale from "Strongly disagree" to "Strongly agree"
Happiness	EPOCH Adolescent Measure of Well-being	5 items of the Happiness subscale were used - Rated on a 5-point scale from "Almost never" to "Almost always"
Optimism	EPOCH Adolescent Measure of Well-being	5 items of the Optimism subscale were used - Rated on a 5-point scale from "Almost never" to "Almost always"
Meaning	Orientations to Happiness	6 items of the Meaning subscale were used - Rated on a 5-point scale from "Not like me at all" to "Very much like me"
Autonomy, Competence & Relatedness	Children's Intrinsic Need Satisfaction Scale	18 items that assess adolescents' autonomy, competence and relatedness across three contexts (at home, at school, and with friends) - Rated on a 5-point scale from "Not at all true" to "Very true"
Engagement & Perseverance	EPOCH Adolescent Measure of Well-being	10 items of the Engagement and Perseverance subscales were used - Rated on a 5-point scale from "Almost never" to "Almost always"

Indicators of Social Relationships & Anti-social Behaviours		
Component	Measure	Description
Bullying Victimisation Pro-social	Bullying Prevalence Questionnaire	20 items that assess the prevalence of Pro-social tendencies, Victimisation and Bullying in various situations - Rated on a 4-point scale from "Never" to "Very often"
Cyber-bullying	Cyber-bullying	4 items that assess the prevalence of cyber-bullying behaviour - Rated on a 4-point scale from "Never" to "Very often"
Connectedness	EPOCH Adolescent Measure of Well-being	5 items of the Connectedness subscale were used - Rated on a 5-point scale from "Almost never" to "Almost always"
Pro-social behaviour	Strengths and Difficulties Questionnaire	5 items of the Pro-Social behaviour subscale were used - Rated on a 5-point scale from "Not true" to "Certainly true"



Positive Engagement and Accomplishment (School)

Component	Measure	Description
School Engagement	Purpose-designed questions	• Single items on meaningfulness of school work, importance of school learning for later life, missed classes, school enjoyment, hating being in school, and trying one's best at school • Rated on a 5-point scale from "Never" to "Almost always"

Physical Health

Component	Measure	Description
Self-reported health	Purpose-designed questions	• Items describing sleep quality, sleep quantity, energy levels, self-rated physical health

Demographics

Component	Measure	Description
Demographics	Purpose-designed questions	• Items describing age, gender, country of birth and family's origin, socioeconomic factors

Focus Group

Component	Measure	Description
Student feedback	Purpose-designed questions	• Questions about positive education program content and delivery.

Findings

Research Question 1:

What factors are important for student well-being?

Factor analysis of all measured variables identified two higher order categories: Positive Indicators and Risk Factors (see Figure 3 for specific indices of each category).

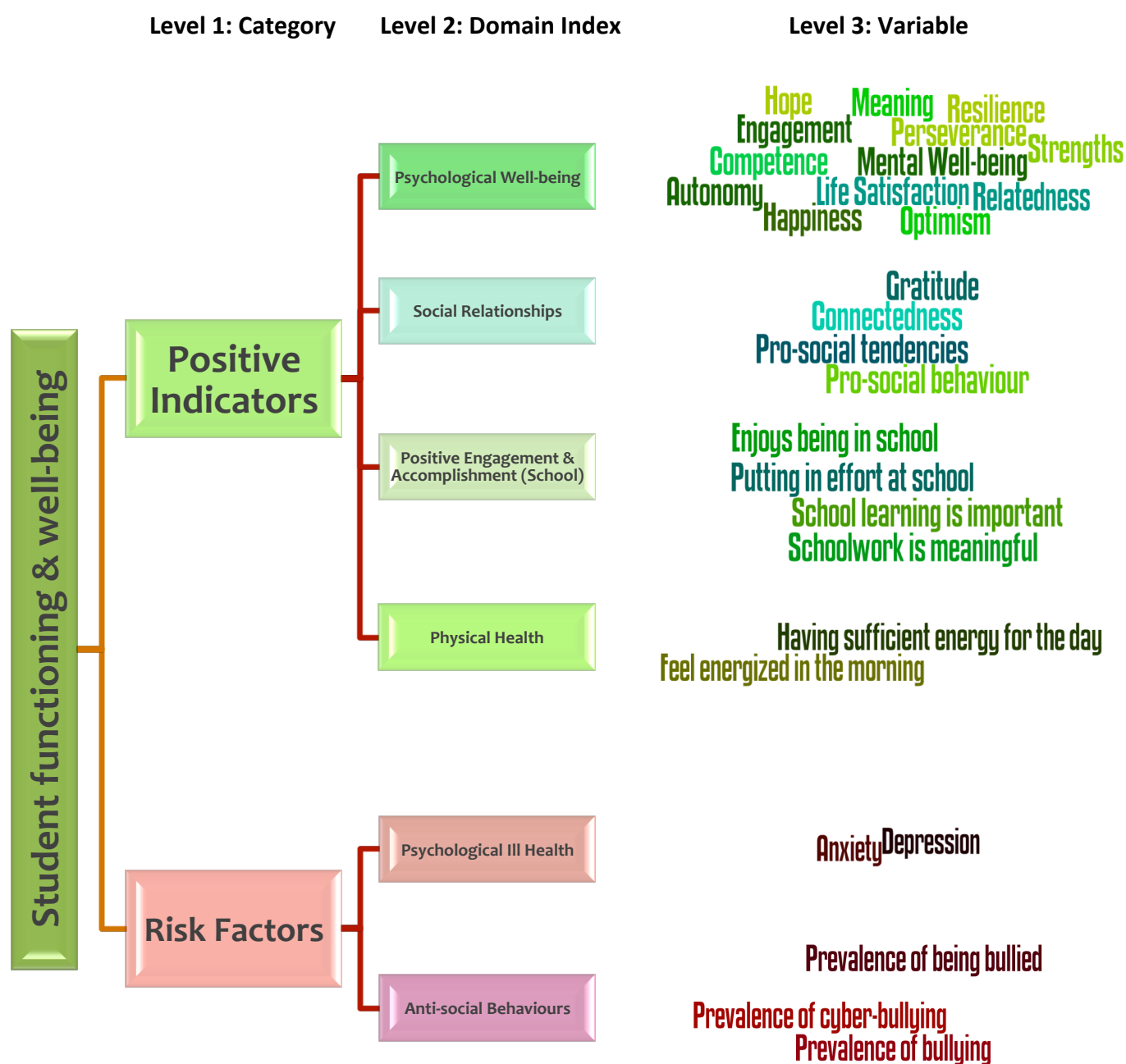


Figure 3. Indices of Positive Indicators and Risk Factors derived from factor analysis.

Research Question 2:

Do Year 10 GGS students experience positive changes from the year-long PEP? How do these findings compare with the comparison school student group? Are the changes sustained over time?

Changes were first examined using the six domain indices (Psychological well-being; Social relationships; School engagement & accomplishment; Physical health; Psychological ill health; Anti-social behaviours) derived from the factor analysis. Group means were compared over time and the results for each of the six domain indices are presented in Figure 4.

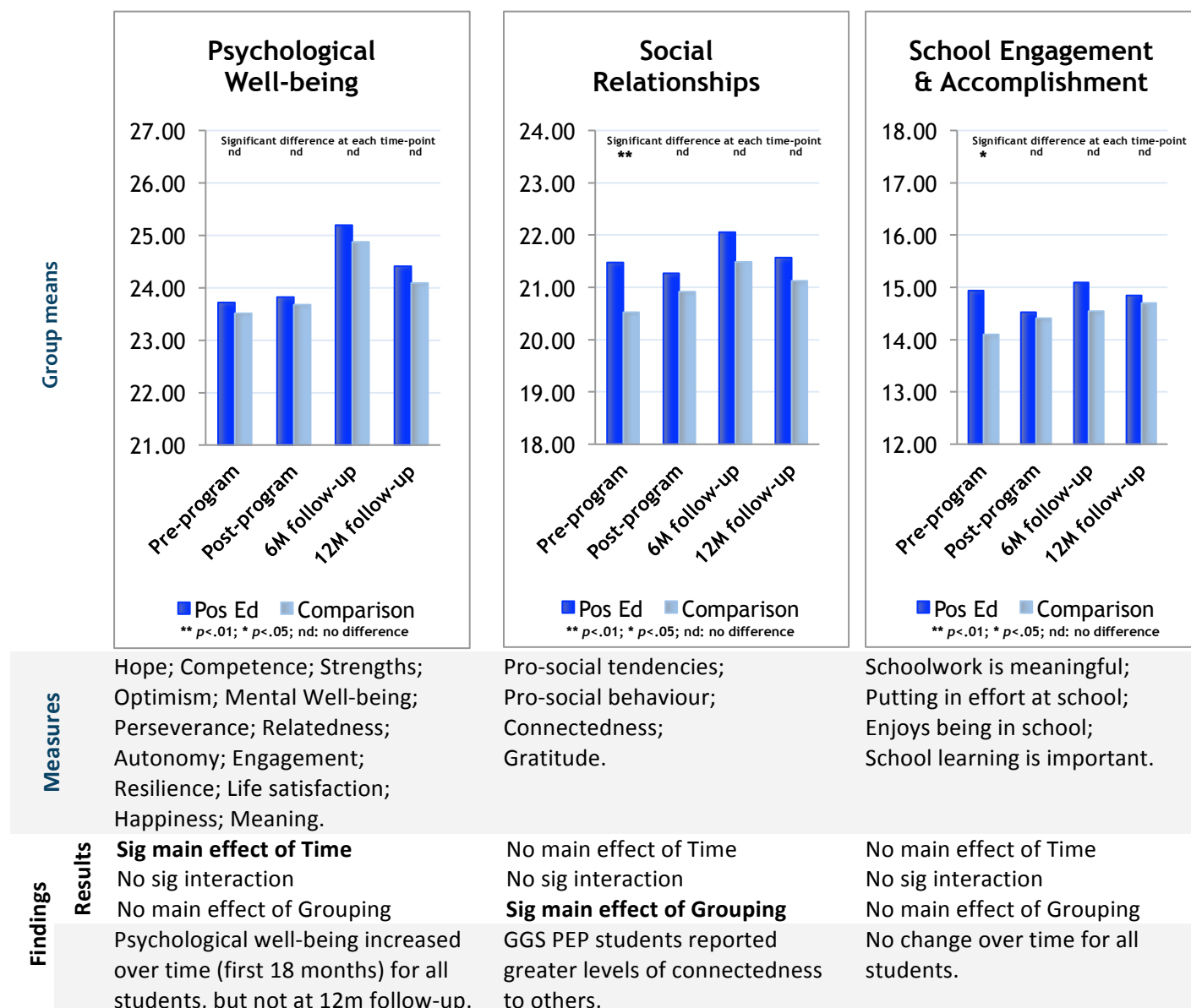


Figure 4. Overview of findings.

A significant main effect of time indicates that the pattern of change in an outcome measure is the same for both groups over time. The significant main effect of time for the domain index of Psychological well-being shows that both groups change in a similar manner over time. A significant main effect of grouping indicates that the means are statistically different between the two groups, with GGS PEP students reporting higher scores for the domain index of Social Relationships than comparison group students.



A significant interaction effect indicates that there is statistical difference in the pattern of change for both groups over time, where scores for one group improve or decline more rapidly than the other group, or when one group increases over time whereas the other group plateaus or declines over the same period of time.

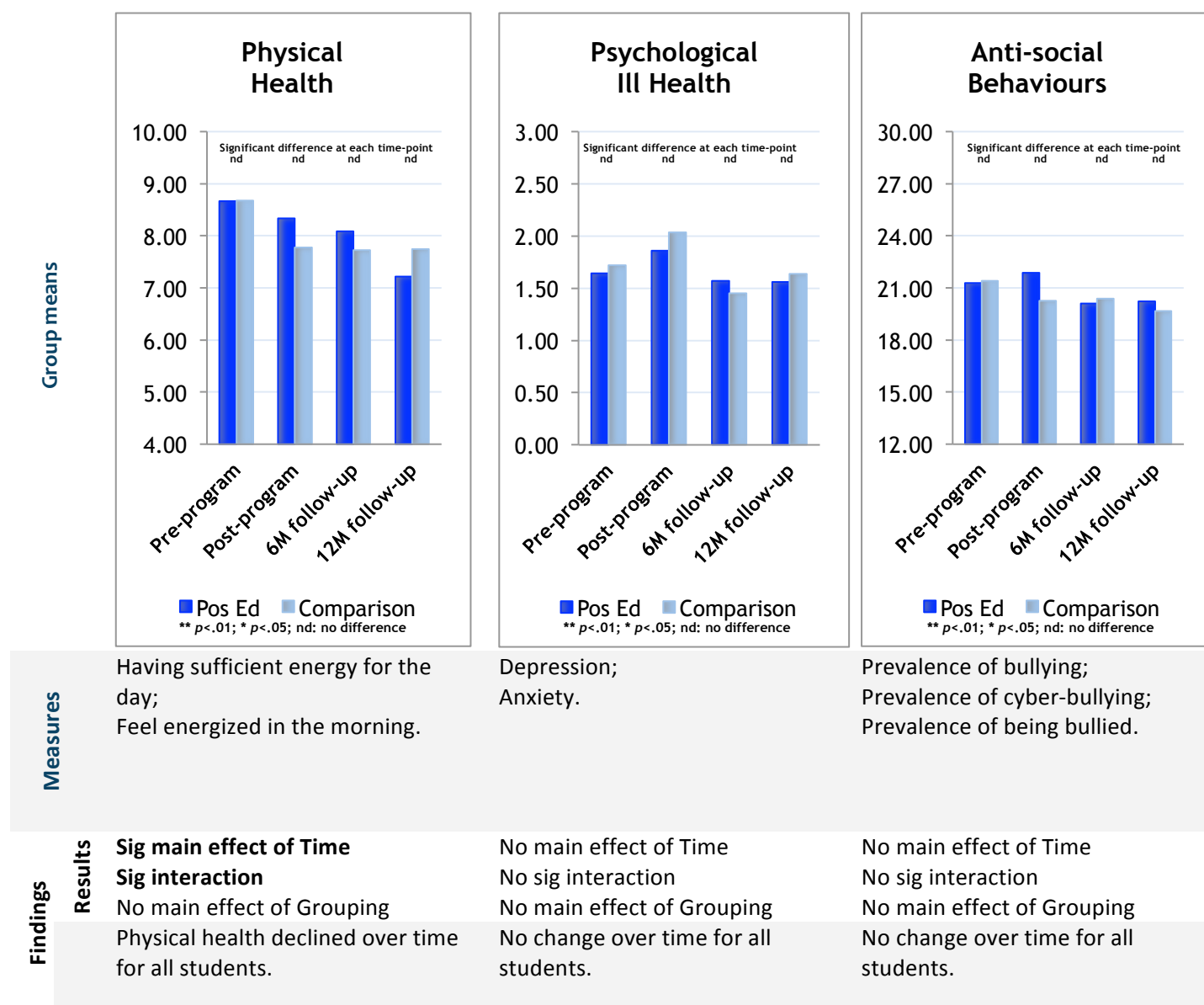


Figure 4 (continued). Overview of findings.

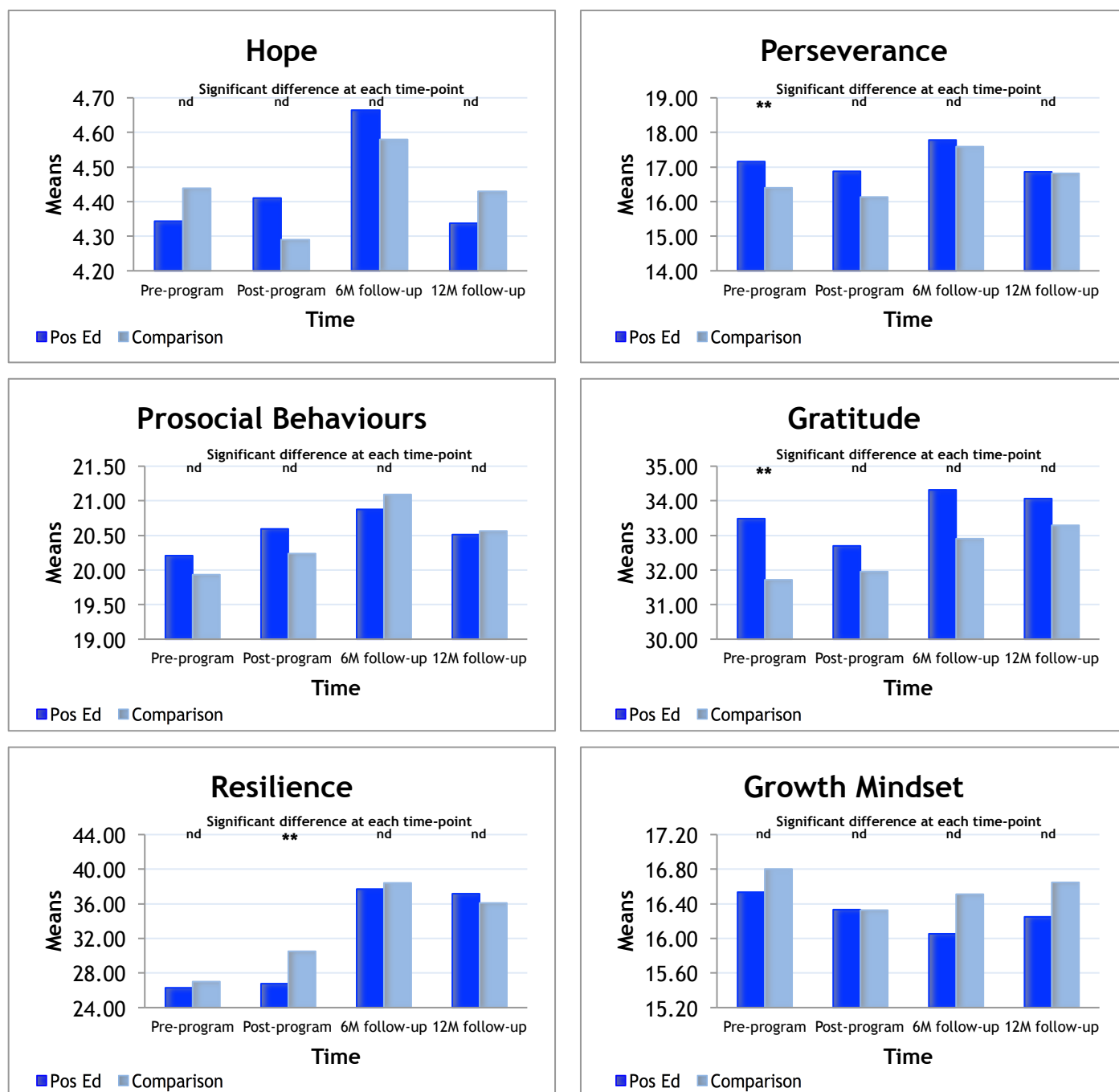
A significant main effect of time indicates that both groups reported change in physical health over time. The significant interaction indicates that the groups are changing over time but are changing in different ways. GGS PEP students have a steady decline in physical health over time, whereas this decline is less pronounced over time and stabilises across time 2-4 for the comparison schools.

Pattern of effects across measured variables

Apart from the six domain indices, group means for each of the measured variables were also compared over time. Across all the measured variables, several patterns of effects emerged.

Main effect of time

A significant main effect of time was found for the following six variables: Hope; Perseverance; Prosocial Behaviours; Gratitude; Resilience; Growth Mindset. A significant main effect of time indicated that both groups reported similar patterns of change over time for each of the following six variables presented in Figure 5.

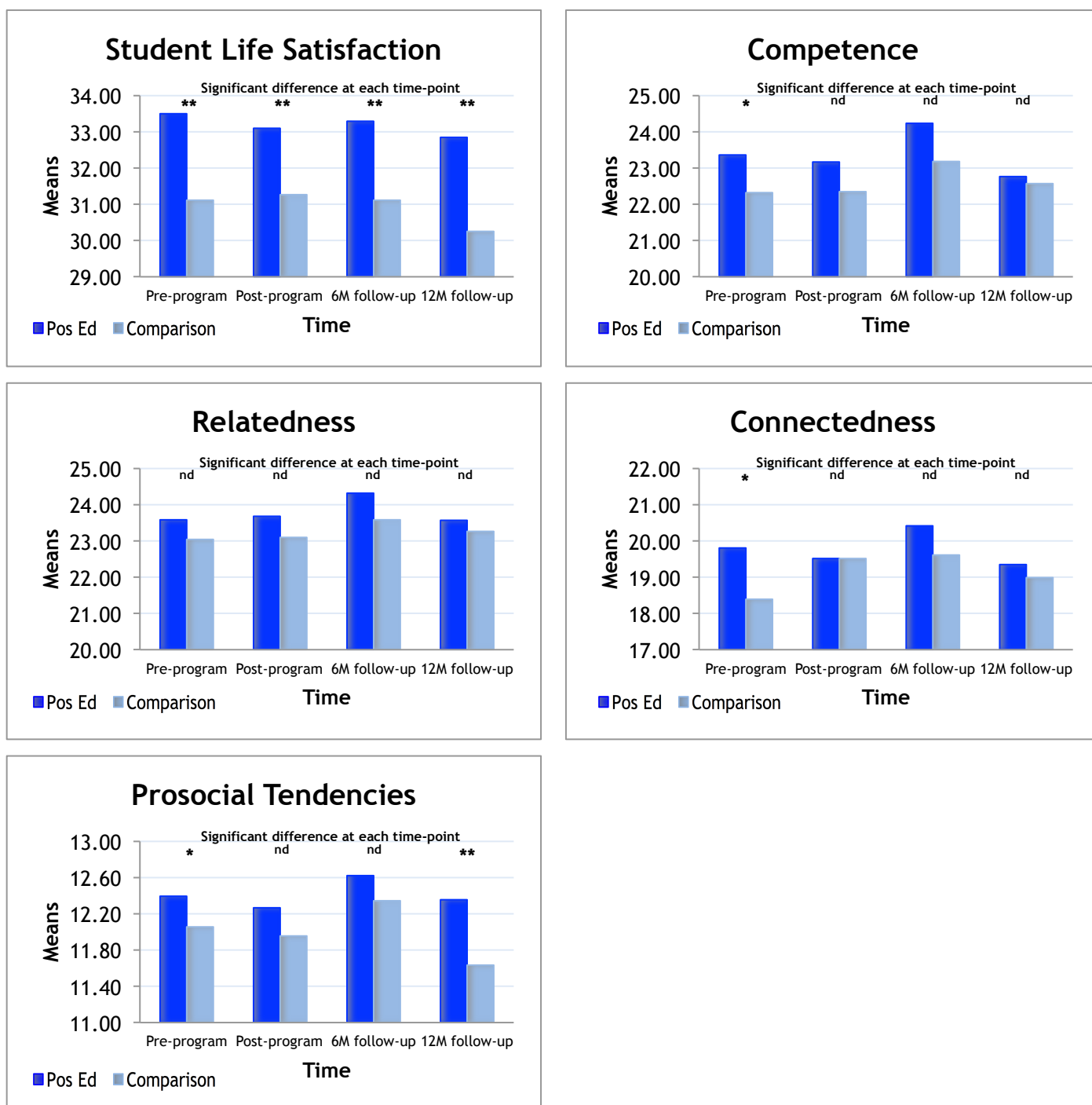


** $p < .01$; * $p < .05$; nd: no difference

Figure 5. Summary of variables with significant main effect of time.

Main effect of group

Significant main effect of group was found for the following five variables: Student Life Satisfaction; Competence; Relatedness; Connectedness; Prosocial Tendencies.



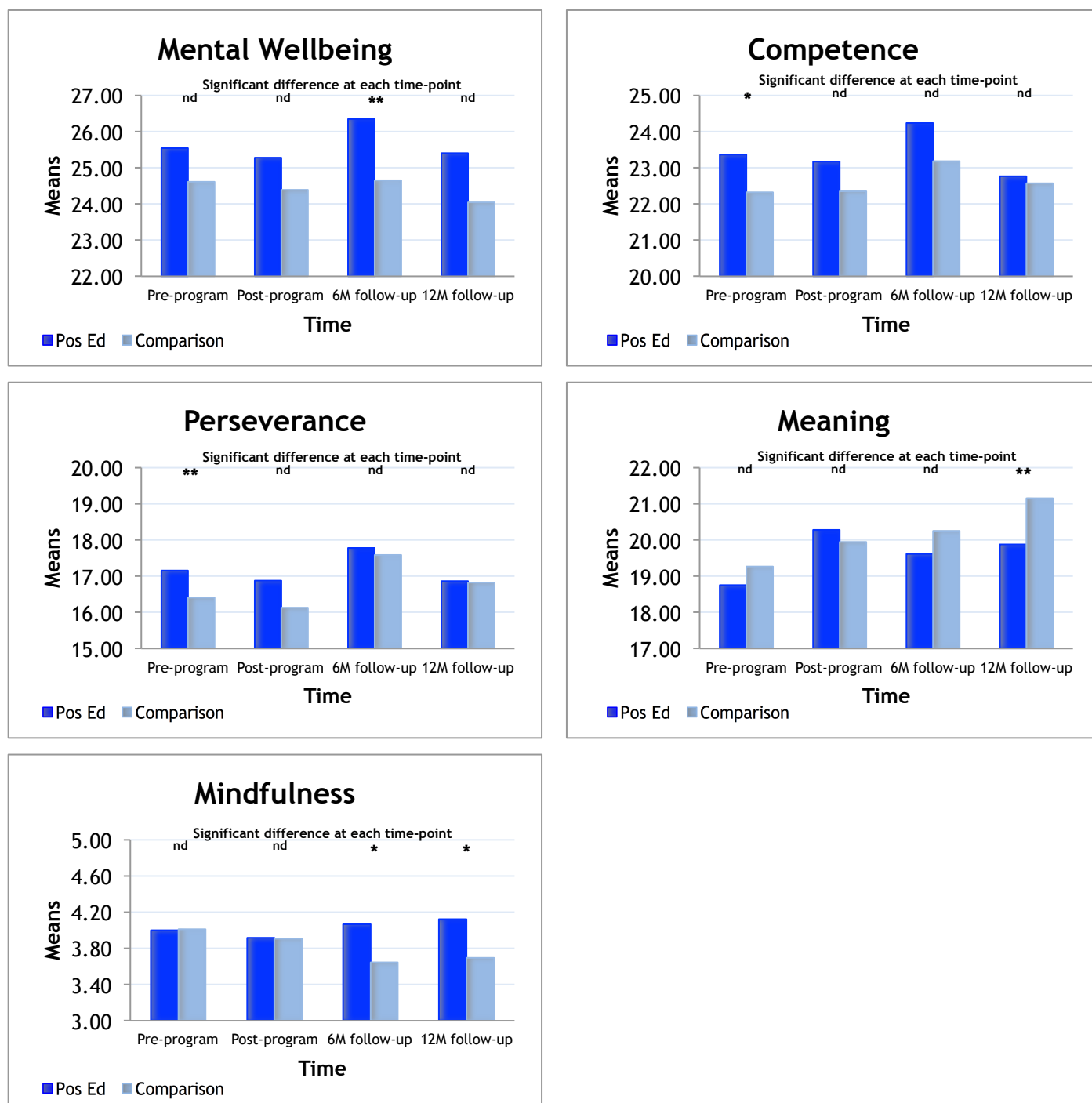
** $p < .01$; * $p < .05$; nd: no difference

Figure 6. Summary of variables with significant main effect of group.

Analyses of the above variables demonstrated main effect of group, but no time or interaction effect. The group effect indicated that the GGS PEP students reported higher scores on these variables. The descriptive statistics suggest that PEP students reported a general trend of higher levels of student life satisfaction, competence, relatedness, connectedness and prosocial tendencies at each of the time-points.

Significant group difference over time

Significant interaction effect of group and time was found for the following five variables: Mental Wellbeing; Competence; Perseverance; Meaning; Mindfulness.



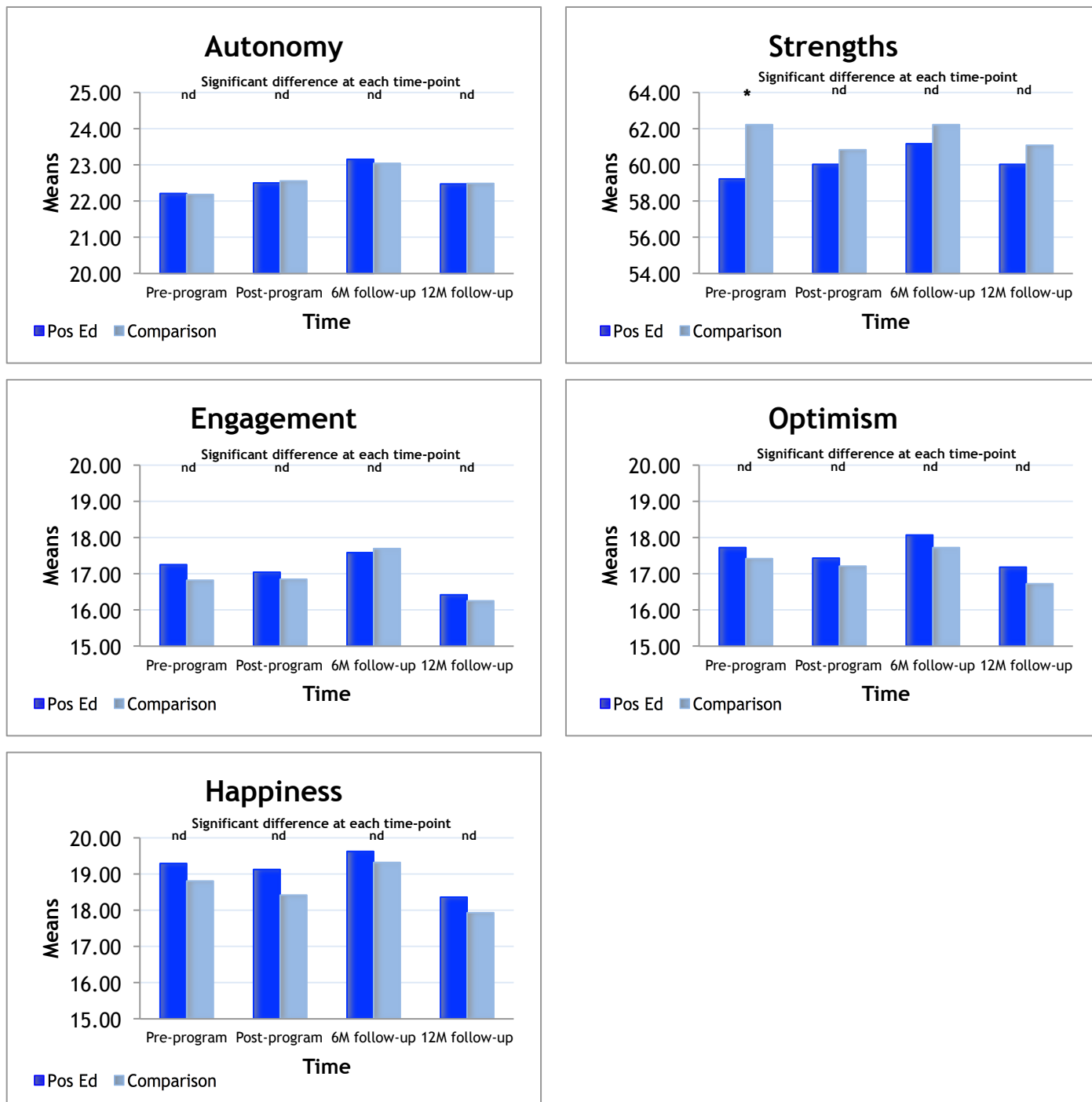
** $p < .01$; * $p < .05$; nd: no difference

Figure 7. Summary of variables with significant group difference over time.

Analyses of the above variables demonstrated significant interaction effect of group and time, with no main effects of group or time. The descriptive statistics suggest that PEP students reported a general trend of higher levels of mental wellbeing, competence, perseverance and mindfulness. Contrary to expectations, comparison schools reported improved meaning compared with PEP students.

No significant effects of time, group or group difference over time

Significant differences were not observed for the following positive indicator variables: Autonomy; Strengths; Engagement; Optimism; Happiness.

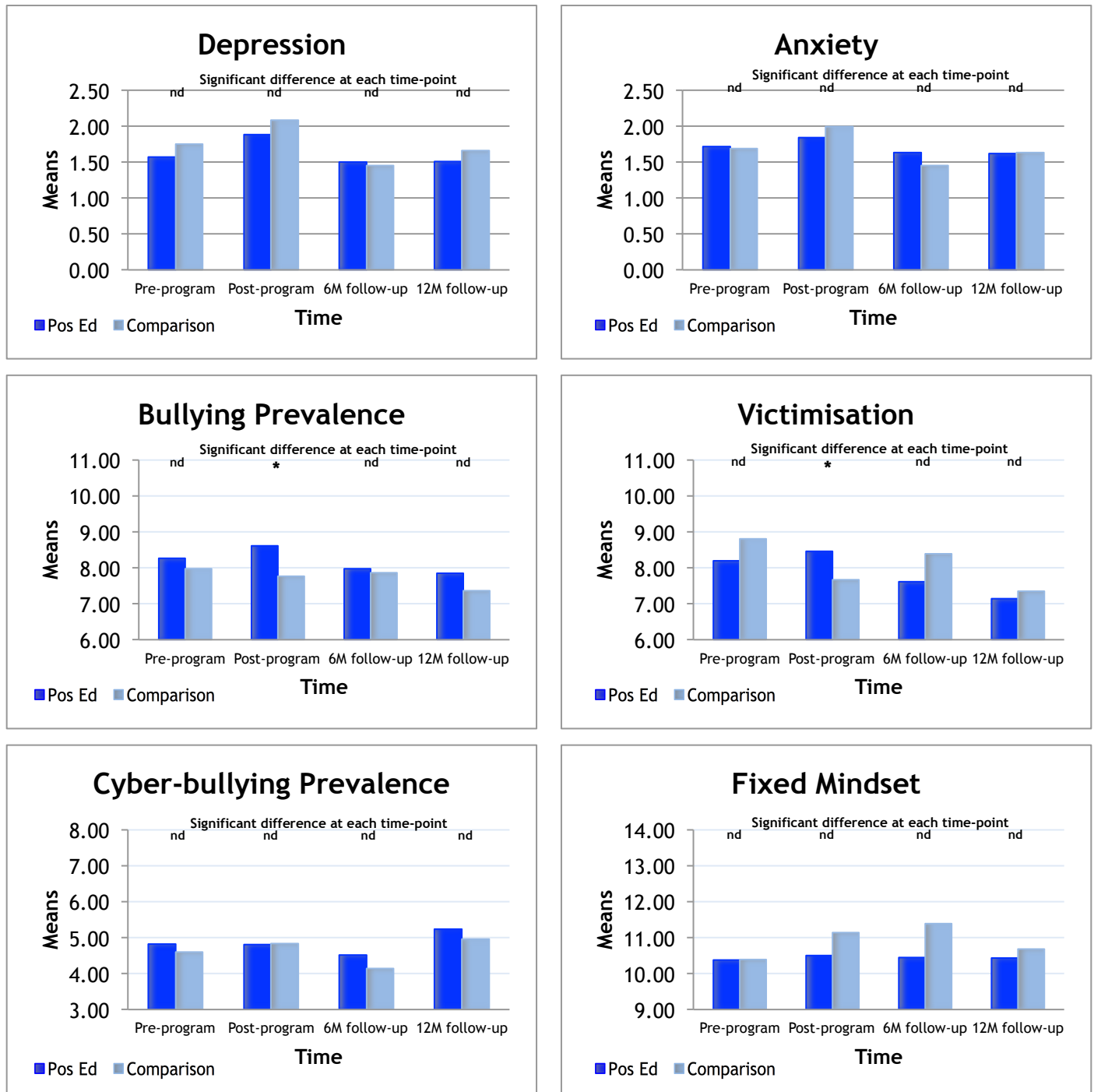


** $p < .01$; * $p < .05$; nd: no difference

Figure 8. Summary of positive indicator variables with no significant main effects of time, group or group difference over time.

There was no change over time for all students for these variables: Autonomy; Strengths; Engagement; Optimism; Happiness.

Significant differences were not observed for the following risk factor variables: Depression; Anxiety; Bullying prevalence; Victimisation; Cyber-bullying prevalence; Fixed mindset.



** $p < .01$; * $p < .05$; nd: no difference

Figure 9. Summary of risk factor variables with no significant main effects of time, group or group difference over time.

There was no change over time for all students for these variables: Depression; Anxiety; Bullying prevalence; Victimisation; Cyber-bullying prevalence; Fixed mindset.



Research Question 3:

Which components of the GGS PEP are suitable for implementation in public schools?

Sixteen teachers from participating public schools completed a 2-day face to face PEP training program led by experienced GGS staff. The teachers were trained in the delivery of a 16-week PEP. After this PEP training, comments and feedback were sought from teachers from the participating public schools about (a) the components of the GGS PEP that would be most suitable for their students and (b) some of the common well-being issues that their students faced. Students' perspectives on these questions were also sought in separate focus groups from the teachers to gain insight on suitable and relevant aspects of the GGS PEP, to be implemented at the public schools. Students were asked to rank topics developed by GGS based on their Year 10 PEP, from 1 (most important) to 16 (least important) based on the suitability to meet their current needs. Teachers were also requested to rank the same list of topics based on the perceived needs of their students. Summaries of both students' and teachers' rankings are shown below.

Table 5:
Pooled ranking by Year 10 teachers (N = 12).

PEP Topics	Pooled rankings by teachers
How to develop a positive attitude to life	3.00
Recognizing your positive qualities	4.25
How to use your strengths in everything you do	5.00
Being resourceful during times of stress	6.25
How to recognize positive qualities in others	6.38
What does it mean to feel good?	6.63
Feeling hopeful about the future	7.63
Learning to be open to new possibilities	7.75
Learning to show more appreciation	8.50
Finding ways of doing what you love	8.88
Ways of getting along well with others during good times	9.38
Ways of getting along well with others during hard times	9.50
Understanding why feeling good is important	10.38
Training your brain for well-being and performance	10.50
Understanding how you can make a difference to the world	11.38
Is well-being different across the world?	14.13

Table 6:***Pooled ranking by Year 10 students (N = 27).***

PEP Topics	Pooled rankings by students
How to use your strengths in everything you do	5.11
How to develop a positive attitude to life	5.15
Finding ways of doing what you love	6.30
Recognizing your positive qualities	6.44
Feeling hopeful about the future	6.52
Ways of getting along well with others during hard times	7.74
Training your brain for well-being and performance	7.78
Understanding how you can make a difference to the world	7.96
Learning to be open to new possibilities	8.15
Being resourceful during times of stress	8.19
Ways of getting along well with others during good times	9.33
Understanding why feeling good is important	9.41
What does it mean to feel good?	9.81
Learning to show more appreciation	9.85
How to recognize positive qualities in others	10.85
Is well-being different across the world?	10.89

The top four topics (see highlighted in Tables 5 and 6) that were selected most frequently by both teachers and students as most relevant for inclusion in a PEP for their school were: How to develop a positive attitude to life; Recognising your positive qualities; Using strengths in everything you do and; Feeling hopeful about the future. Consequently, these PEP topics were prioritised for delivery as part of the PEP program for the participating public schools.

Both Year 10 teachers and students from participating public schools were also asked to provide their perspectives on common issues and/or challenges faced by students. These pre-program discussions provided the school context in which the PEP was to be delivered to the students. Figures 10 and 11 provide an overview of the key issues mentioned by teachers and students respectively.



Figure 10. Teachers' perspectives on common issues faced by students.

Some common issues raised by teachers include concerns regarding students' home situation and experience outside school.



Stress about not finishing work on time	When some students are loud and you can't concentrate on school work	I am mostly sick	Too much homework
Doing stuff at school I don't understand	Sleep	Focusing in class/ school	Organizing
Not fully understanding the work and stressing out if they are not getting done	Getting things done on time	Pressured for work that isn't going to benefit my future but is all about my grade scores	Teachers
Stress at school	Keeping up with school work	Understanding why we do school work	Not getting enough attention from teachers
Stress of careers	Relationships at school (with teachers) - them not understanding how we are	Waking up early	Tough times with peers
Teachers not explaining things clearly	Not having enough sleep	Not having enough food	Being able to trust my friends and teachers
Forgetting things	Motivation to do homework	Emotions can be very sharp at times	Built up emotions and venting on others
I don't have a life	Anxiety	Not wanting to go to school	Worries about the future

Colour legend:

School	Health	Emotions	Other concerns	Relationships
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Figure 11. Students' perspectives on common issues faced by students.

Students on the other hand reported more challenges and concerns with school. The differences in perspectives from teachers and students highlight the importance of pre-program consultation to understand contexts, concerns and needs to identify practical and relevant activities and resources for students.

Research Question 4:

Do Year 10 PEP students in participating public schools experience positive changes from an adapted GGS PEP as compared to control peers from the same school?

Changes were examined using the six domain indices (Psychological well-being; Social relationships; School engagement & accomplishment; Physical health; Psychological ill health; Anti-social behaviours) derived from the factor analysis. Group means were compared over time and the results for each of the six indices are presented in Figure 12.

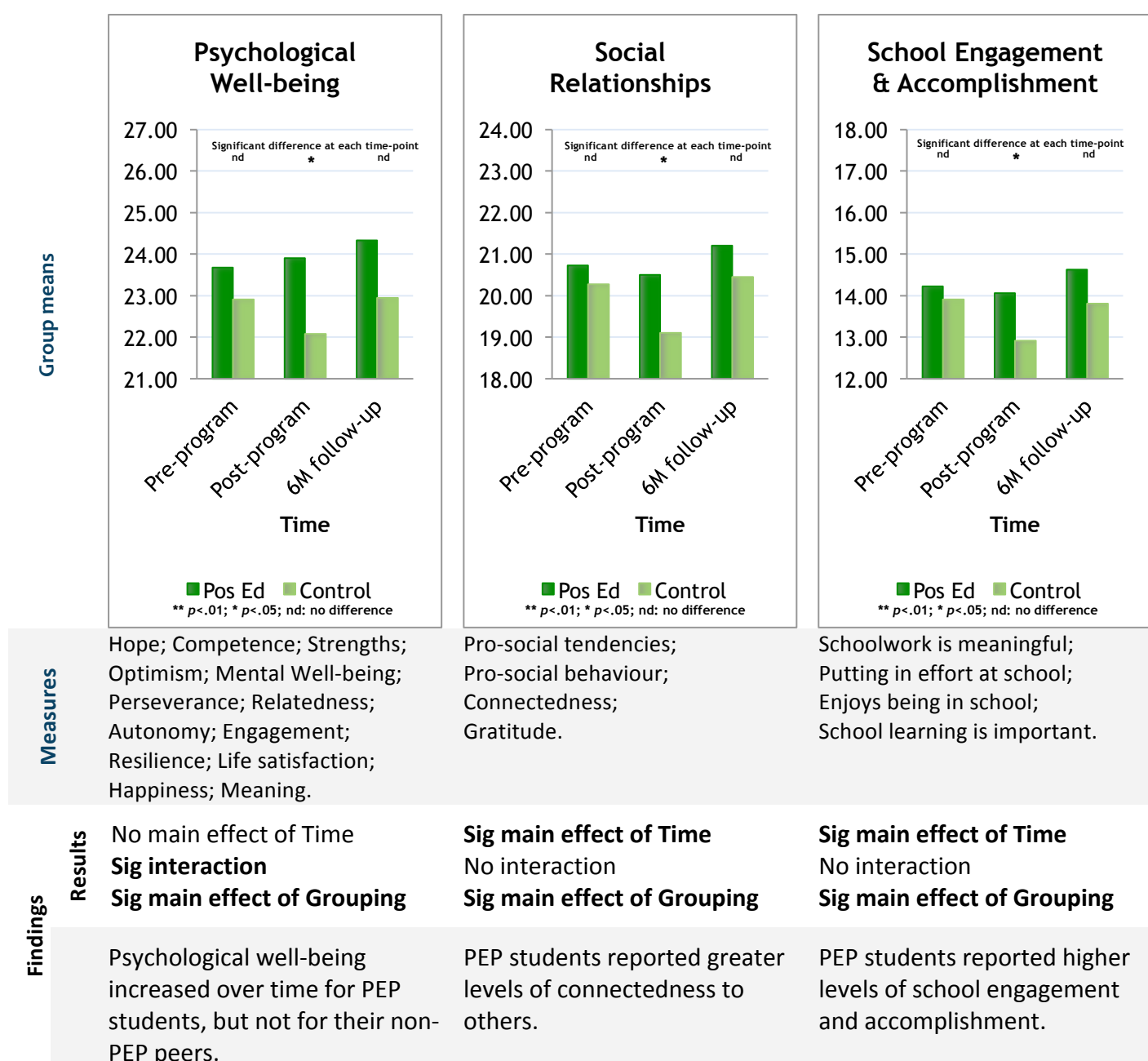


Figure 12. Overview of findings.

PEP students reported significantly higher levels of psychological well-being over time as compared to their non-PEP peers. (See Appendices for full data).

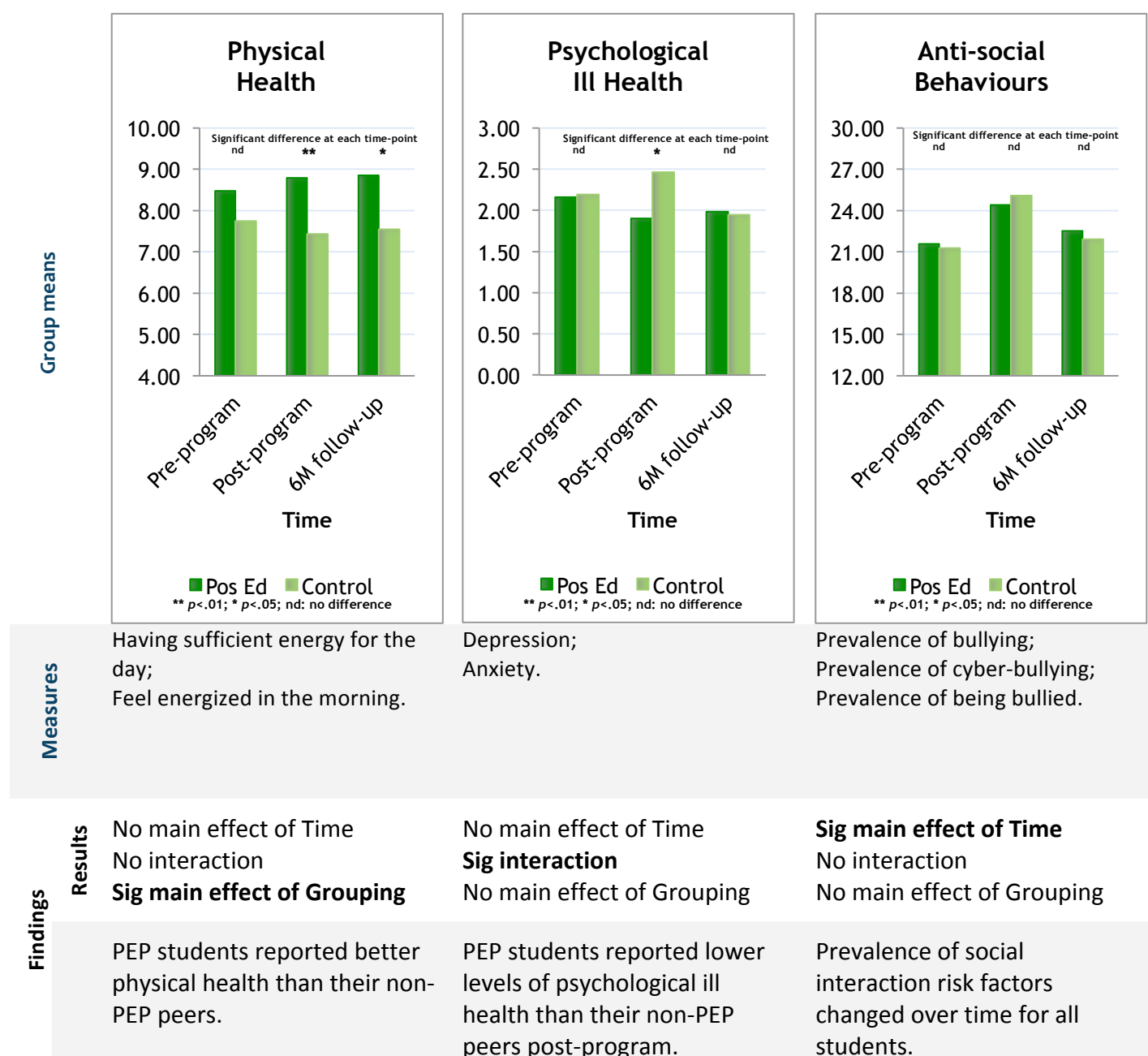


Figure 12 (continued). Overview of findings.

As compared to non-PEP students, PEP students reported significantly lower levels of psychological ill health immediately post-program. (See Appendices for full data).



Discussion & Implications

What factors are important for student well-being?

The first step in this study was to examine the factor structure underpinning well-being based on the measures used for this study. Two higher order categories of student functioning and well-being were found with the current data set. These factors were Risk Factors and Positive Indicators. *Risk factors* include: (a) Psychological ill-health, namely Anxiety and Depression; and (b) Anti-social behaviours relating to bullying, being bullied and cyber-bullying. *Positive indicators* include: (a) Psychological Well-being; (b) Social Relationships; (c) School Engagement and Accomplishment; and (d) Physical Health. Collectively these broad domains depicting ill-health and well-being are consistent with the dual model of mental health²⁷. This model accentuates the need to not only ameliorate illness but to promote flourishing (feeling good and functioning well).

The positive domain index of Psychological Well-being is a positive index which includes many core constructs such as Autonomy, Competence and Relatedness (Self Determination Theory²⁸), Happiness and Life Satisfaction (subjective well-being and hedonia), and Engagement and Meaning (eudaimonia). Other important variables around Hope and Strengths are also captured under the Psychological Well-being domain index. Along with the other three positive indicators; namely Social Relationships, School Engagement and Accomplishment, and Physical Health (energy levels), a comprehensive framework for assessing well-being and aligning with recent models of well-being such as PERMA⁸ and PERMAH⁷ has emerged. Assessing risk factors revolving around the 2 domain indices of Psychological ill health and Anti-social behaviours is also highly relevant given the prevalence of mental illness among adolescents and the growing concerns around bullying and cyber-bullying⁵. This dual framework for assessing student functioning and well-being enables good coverage of the mental health continuum as recommended by Keyes²⁷.

Do Year 10 GGS students experience positive changes from the year-long PEP? How do these findings compare with the comparison school student group? Are the changes sustained over time?

To answer these questions about change over time and WBAU comparison groups, it is first important to understand the types of well-being activities and programs that are being



delivered to Year 10 students at the comparison schools as well as at GGS, and the changes one might realistically expect to gain over time as a result of the actual programs delivered. Table 2 provides an overview of the well-being framework adopted by the schools involved, the number of sessions and the duration of each session, as well as the topics covered. It is evident from this table that since 2015 all participating schools have undertaken quite extensive levels of well-being education. Hence it would not be accurate to label any of the schools involved in this research as control or ‘well-being as usual’ schools as was originally intended at the commencement of the project when these schools were involved in substantially less well-being curriculum. It is now more appropriate to assess each of the participating schools based on the level of exposure to Positive Education concepts the Year 10 students being tracked in this study, actually experienced. Exposure will be determined according to both content coverage and time. Consideration of the school’s broad philosophy around Positive Education is also relevant. For example, is a whole school approach which includes extensive training as well as embedded, implicit practice adopted by the school?

GGS Year 10 students have had more extensive content coverage and time committed to learning about Positive Education compared with the two comparison schools. GGS Year 10 students participated in weekly 90-minute classes spanning the full year, covering a broad range of positive education topics. In addition to the explicit teaching of positive education, they have adopted a whole school approach to experiencing and teaching positive education and embedding it into daily practices both inside and outside the classroom (e.g., community engagement, sporting and performing arts). The comparison schools have also had considerable exposure to positive education via 60 or 50 minute classes delivered weekly or fortnightly respectively, but these classes have not spanned consistently across the full year and may not have been explicitly labelled Positive Education. However, taking a look at the topics covered at the comparison schools, the overlap with the GGS program content is clearly apparent particularly around the topics of flourishing, strengths, resilience, relationships and future visioning. **Therefore, it is not accurate for these comparison schools to be labelled as either control or well-being as usual schools as they are relatively progressive in their delivery of health and well-being curricula. This is an important point that warrants attention when interpreting the results of this study.**

It is likely that over time students from all participating schools will report mental health improvements, particularly in areas most closely aligned with the content of the well-being programs being delivered, such as in the domain indices of Psychological Well-being and Social Relationships. Indeed this was the case for the broad domain index of Psychological



Well-being and the more specific variables of Hope, Perseverance, Prosocial Behaviours, Gratitude and Resilience, whereby GGS and the comparison schools all increased well-being from pre-program assessment to the 6 month follow up. A decline at the 12 month follow up was also evident for many of these variables suggesting that explicit positive education may need to continue to be delivered to students (not necessarily at the same dosage level as the year-long program) if long term psychological well-being outcomes are to occur. Interestingly, for some variables such as perseverance, gratitude and growth mindset, there is also a slight dip at post-program assessment which took place around mid-November, 2014. This may reflect the end of year struggles and fatigue that senior school students typically experience in response to cumulative study and academic anxiety associated with sitting exams.

Group differences

It is noteworthy that in most instances GGS students reported higher levels of well-being than comparison schools, especially at baseline. This was especially evident for Social Relationships and School Engagement and Accomplishment. One plausible reason for this is that the majority of Year 10 GGS students also experienced explicit positive education classes in Year 9 at the Timbertop campus. Hence, for GGS Year 10 students, these pre-program assessments are not true baseline measures but are inclusive of the substantial positive effects gained from the Year 9 program²⁹. Comparison school students did not have explicit well-being classes that focused on positive education content prior to Year 10, but would have had 'well-being as usual' including learnings from health and physical education classes and from programs such as Bounce Back and the Reach Foundation as well as presentations from guest speakers. It appears, therefore, that the effects of continued positive education across Years 9 and 10 may be beneficial in contributing to a higher level of social well-being and school engagement for GGS students relative to comparison school students.

Focusing more specifically at the variable level, there are significant group differences in Student Life Satisfaction at each of the four assessment points whereby GGS students report higher levels than comparison school students. Trends favouring GGS are also evident for Competence, Relatedness, Connectedness and Prosocial Tendencies as presented in Figure 6. This is consistent with the PEP delivered at GGS which emphasises and gives extensive coverage to building strong relationships in both good and bad times as well as encouraging gratitude.



Group differences over time

As expected, with the higher dosage of positive education and the more established whole school approach to Positive Education, GGS Yr 10 students do experience some positive changes from the year-long PEP as compared to students completing well-being programs from the other participating schools. GGS students as a group, relative to the comparison schools, reported improvements over time in Mental Well-being and Mindfulness, whereby GGS and comparison school groups were not statistically different at pre-program but over time became statistically significantly different at the follow-up assessments with the GGS student group reporting improvements and the comparison student group showing slight declines or no improvement. This decline in overall well-being and mental health from the start of the year to the end of the year is a common observation for secondary school students²⁹. **Hence, it is promising that GGS PEP students are able to mitigate the typical declining trajectory and to in fact show some improvements in some of the reported well-being outcomes.**

One unexpected finding is that meaning improved over time for the comparison schools relative to GGS PEP students. Perhaps the personal Coaching sessions combined with the Leading in Life leadership program and the “purpose” component of the PROSPER²³ framework, delivered at School 1, was a contributing factor to the improvements in meaning.

No group difference over time

It is important to note that there were many variables which did not change over time or deteriorated for both the GGS students and the comparison school students. For example, Anti-Social Behaviours remained fairly stable over time. This is not surprising given that the PEP/Well-being programs delivered by the participating schools did not directly address bullying and cyber-bullying issues but instead focused on building high quality, meaningful relationships. It appears that a more explicit approach to addressing anti-social behaviours may be needed to reduce the reported prevalence of bullying, being bullied and cyber-bullying. No significant changes were observed for Depression and Anxiety either. This aligns with the content of the PEP and Well-Being programs which focused predominantly on strengths, flourishing and building strong relationships. The emphasis was largely on building positive qualities and skills such as positive emotions, positivity, gratitude, hope and optimism. None of the sessions addressed Depression or Anxiety directly. Consequently, it makes sense that the GGS PEP was more effective in enhancing the positive indicators of student functioning and well-being than it was in reducing the risk



factors. This is unfortunate given that psychological health deteriorates over the course of the school year. Using an assets based approach to addressing Anxiety, Depression and Bullying may be a valuable addition to the GGS PEP program in the future. It would also be a worthwhile complement to traditional school-based counselling services which are not well utilised by those in need largely due to the stigma and detachment associated with seeking help from health professionals⁶. Over the course of the study and as students advance into the senior years of secondary school, Physical Health, in terms of feeling energetic, also declines for both the GGS PEP students and the comparison school students. This is consistent with the levels of Anxiety and Depression reported by students irrespective of group, over time. These disorders are often associated with lethargy and fatigue.

Which components of the GGS PEP are suitable for implementation in public schools?

A major goal of this research program was to examine the extent to which a PEP tailored from the more comprehensive GGS PEP program for public school needs, could contribute to improvements in student well-being compared with a matched control group completing WBAU.

Both teachers and students were asked to provide their perspectives on common issues and/or challenges faced by students. These pre-program focus group sessions provided useful information about the areas of concern for students in which positive education can be applied to improve student well-being. Teachers could use the issues raised as examples for applying positive psychology interventions that students could relate to. Interestingly teachers perceived challenges and issues to occur outside the school and classroom and to relate to home life (e.g., financial problems at home, helping out at home, abuse/violence at home, homelessness) and physical health such as being tired and not having enough food to eat. In contrast, students described their challenges as relating mostly to the demands of school life, such as the stress of keeping up with school work, being anxious about teachers not explaining things clearly and not understanding school work, the lack of motivation to do homework and to go to school. Students raised concerns about managing relationships, insufficient sleep and food, difficulties with regulating emotions, and worrying about the future and their career, as well as being organised and focused on school work. As evident from Figure 11, students' concerns revolved largely around school and teachers. It appears that teachers' perceptions about the challenges and issues of young people are not well aligned with those expressed by the young people themselves. This discrepancy may hamper the building of trusting and strong relationships between



students and teachers. This is a serious issue given the research findings on the importance of teacher-student relationships for learning reported by Hattie³⁰.

Do Year 10 PEP students in participating public schools experience positive changes from an adapted GGS PEP as compared to control peers from the same school?

Only four sessions of the PEP were delivered by teachers to public school students assigned to the PEP (random assignment into either PEP or control group was based on homeroom class). Given only four out of the possible 16 sessions were delivered to the PEP students, it was somewhat surprising to see that there were significant improvements over time compared with control groups, for Psychological Well-being and Psychological Ill Health. There were also significant improvements over time for both groups, for Social Relationships and, School Engagement and Accomplishment with improvements being most salient at the 6 month follow up rather than at the post-program stage. This finding is consistent with the results from the independent schools and shows that for many PEP or PPI evaluation studies, measuring outcomes only at immediate post-intervention, might be missing the positive outcomes that take some time to manifest, possibly around 6 months. This might be due to the applied nature of positive education and the time necessary for regular practice to occur and for the positive outcomes to mature based on this practice. Based on the independent school findings, 12-month+ follow up may be too long and possibly permits the PEP learnings to fade. It might be worthwhile adding a top up session somewhere between 6 and 12 months post-program.

The results from the public school component were somewhat surprising given only four PEP sessions were delivered over relatively short session times (approximately 30-minute sessions) particularly in comparison to the duration and frequency of the GGS PEP. One reason for this may relate to the conciseness and relevance of the four sessions comprising the public school PEP. It is possible that short sessions of highly relevant content may be more potent than longer sessions every week across a broad range of content.



Recommendations

- Promote student and teacher contributions and insights to ascertain current needs and corresponding goals.
- Schools need to consider addressing anxiety and depression issues using a strengths framework – perhaps more explicit content around managing psychological illness is needed. Consider including school psychologists in the development and delivery of this content, via a PEP.
- PEP has merit in both independent and public secondary schools where some beneficial effects have been found. However, delivering fewer topics, but highly relevant ones, over shorter periods may be more effective than a comprehensive year long program (dosage and content variation warrants further examination).
- A cost-benefit analysis should be undertaken as more data are gathered across studies to ensure that student and school resources are utilised to optimal effect and any positive outcomes are maintained.
- Ensure that program follow-up at least 6 months post-program occurs and consider booster PEP sessions at the 6-12 month post-program time point.
- Consider collecting information about key processes that may influence program implementation in schools (e.g., level of teacher training, number of sessions, content delivered)
- Consider selecting program components based on a needs analysis specific to the school context.

Concluding remarks

As the first phase of a longitudinal project examining the effects of PEPs, the current findings provide some evidence to support the effectiveness of continued Positive Education across Years 9 and 10, particularly in contributing to a general trend of higher levels of psychological and social well-being for GGS students. Effects tended to diminish at the 12 month follow up for many of the variables, suggesting that explicit positive education may need to continue to be delivered to students to mitigate declining levels of well-being as young people encounter greater academic demands during the final year of senior school. Refining a PEP to suit the well-being needs of public school students seems plausible especially given that so few sessions are needed to produce some favourable outcomes. Given the limited resources available to many public schools this is an important outcome that warrants further investigation to see if results can be replicated and are robust.



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Appendices

Research Question 1: Factors of student well-being

Factor analysis of all measures across all time-points.

Range of factor loadings across all time-points

	Psychological Well-being	Anti-social Behaviours	Positive Engagement & Accomplishment	Social Relationships	Physical Health	Psychological Ill Health
Hope	.907-.933					
Competence	.818-.840					
Strengths	.756-.788					
Optimism	.767-.785					
Mental WB	.768-.773					
Perseverance	.723-.750					
Relatedness	.699-.725					
Autonomy	.688-.714					
Engagement	.653-.700					
Resilience	.644-.683					
Life Satisfaction	.638-.654					
Happiness	.584-.629					
Meaning	.467-.496					
Prevalence of bullying		.817-.852				
Prevalence of victimisation		.713-.740				
Prevalence of cyber-bullying		.687-.700				
School work is meaningful			.788-.804			
Try my best effort in school			.705-.740			
Enjoy being in school			.693-.729			
Importance of learning in school for your later life			.697-.722			
Pro-Social Tendencies				.743-.788		
Pro-Social Behaviour				.739-.773		
Connectedness				.683-.733		
Gratitude				.639-.675		
Enough energy to carry out my daily activities					.619-.640	
Feel energized when I wake up in the morning					.582-.603	
Depression						.839-.854
Anxiety						.808-.825

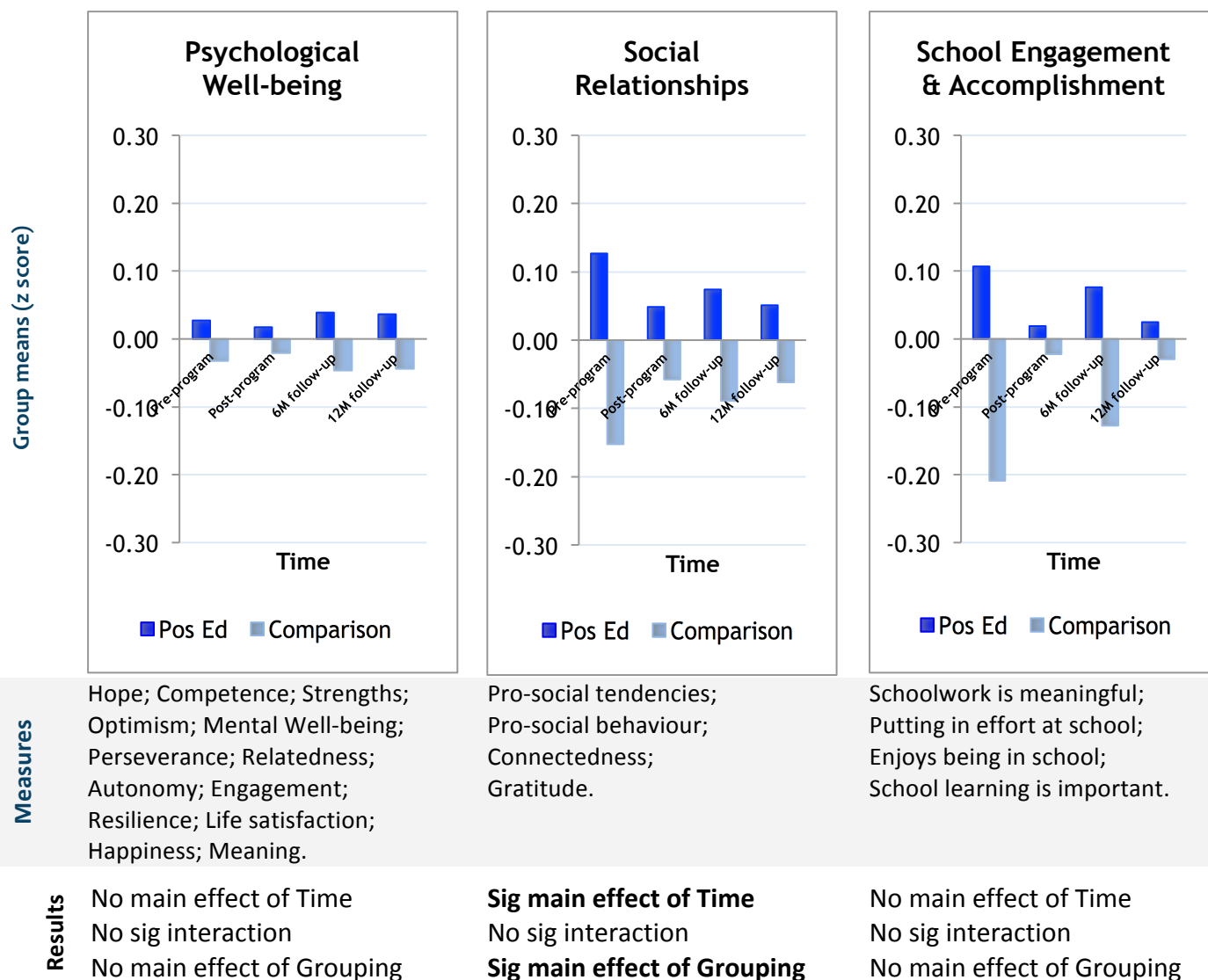
Extraction Method: Principal Component Analysis. Rotation Method: Oblimin with Kaiser Normalization.

Research Question 2: Positive Education vs Comparison Group Data

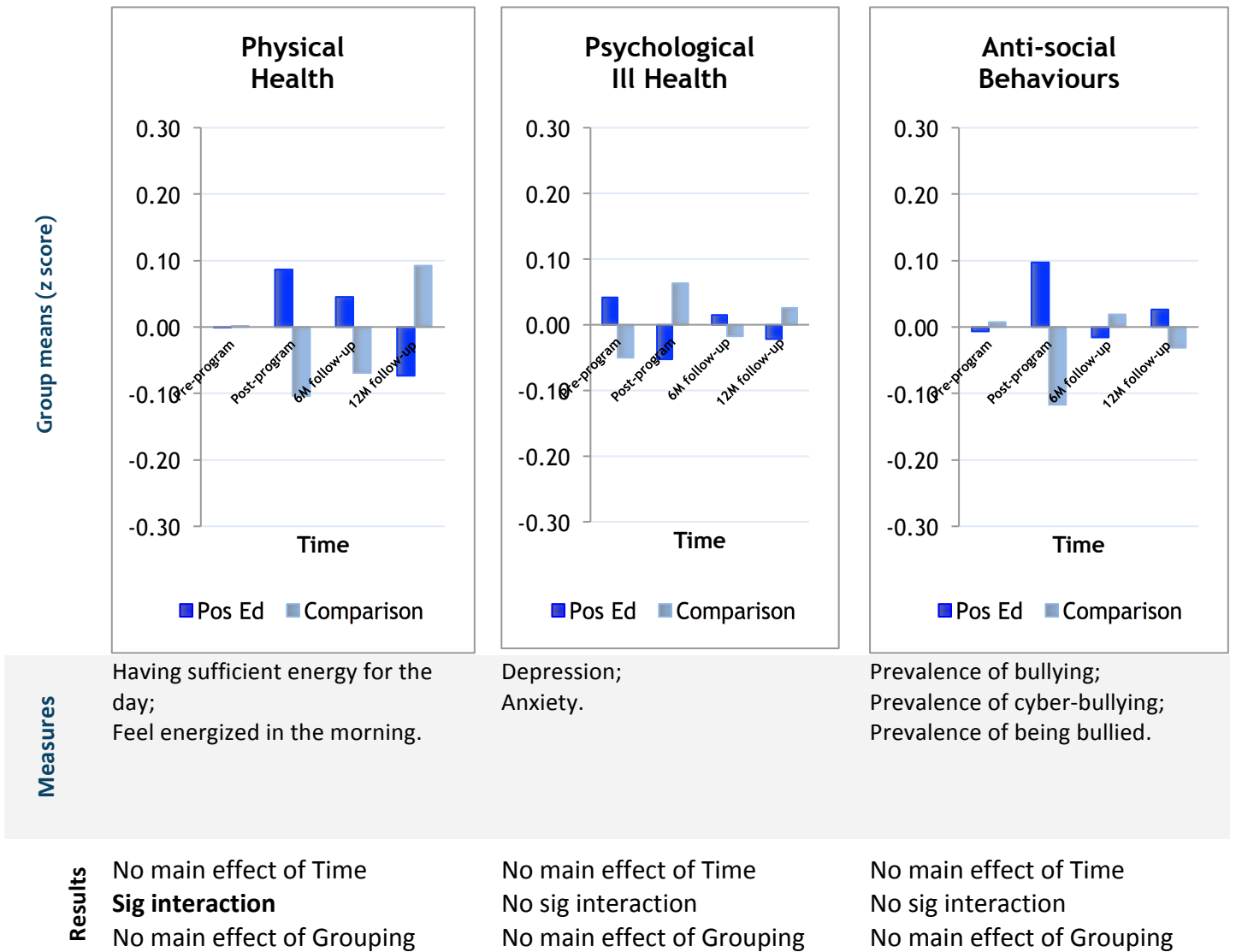
Summary of MANOVA analysis: PEP vs Comparison Group pooled MI means for all indices across four time-points.

Index	Group means		Time	Significant differences	
	PEP (n=162)	Comparison (n=135)		Time*Group	Group
Well-being			✓ $\eta_p^2 = .041$		
	Time 1	23.71	23.51		
	Time 2	23.83	23.68		
	Time 3	25.20	24.87		
	Time 4	24.41	24.09		
School Engagement	Time 1	14.94	14.10		
	Time 2	14.52	14.41		
	Time 3	15.09	14.55		
	Time 4	14.85	14.70		
Social Connectedness					✓ $\eta_p^2 = .036$
	Time 1	21.48	20.53		
	Time 2	21.27	20.92		
	Time 3	22.06	21.49		
	Time 4	21.57	21.12		
Physical Health			✓ $\eta_p^2 = .045$	✓ $\eta_p^2 = .037$	
	Time 1	8.67	8.67		
	Time 2	8.34	7.78		
	Time 3	8.09	7.72		
	Time 4	7.22	7.75		
Mental Health Risk Factors	Time 1	1.64	1.72		
	Time 2	1.86	2.04		
	Time 3	1.57	1.45		
	Time 4	1.56	1.64		
Social Interaction Risk Factors	Time 1	21.28	21.39		
	Time 2	21.88	20.26		
	Time 3	20.11	20.40		
	Time 4	20.24	19.66		

Variation of group mean score from the overall group means:



GGs PEP students reported greater levels of social relationships across all time-points.



GGs PEP students reported significantly higher levels of physical health after the year-long PEP.

Summary of ANOVA analyses - PEP and Comparison Group pooled MI means for all measures across 4 time-points.

Psychological Well-being, Ill Health, Social Relationships & Anti-social Behaviour Indicators					
Component	Group means		Significant differences		
		PEP (n=162)	Comparison (n=135)	Time	Time*Group Group
Mental well-being					✓ $\eta_p^2=.022$
	Time 1	25.55	24.62		
	Time 2	25.28	24.39		
	Time 3	26.34	24.66		
	Time 4	25.41	24.04		
Satisfaction with life					✓ $\eta_p^2=.073$
	Time 1	33.50	31.12		
	Time 2	33.09	31.27		
	Time 3	33.29	31.12		
	Time 4	32.85	30.25		
Autonomy					
	Time 1	22.22	22.18		
	Time 2	22.51	22.56		
	Time 3	23.15	23.04		
	Time 4	22.47	22.49		
Competence					✓ $\eta_p^2=.027$
	Time 1	23.36	22.33		✓ $\eta_p^2=.028$
	Time 2	23.17	22.36		
	Time 3	24.23	23.18		
	Time 4	22.77	22.57		
Relatedness					✓ $\eta_p^2=.026$
	Time 1	23.59	23.05		
	Time 2	23.69	23.10		
	Time 3	24.32	23.59		
	Time 4	23.56	23.26		
Hope				✓ $\eta_p^2=.035$	
	Time 1	4.34	4.44		
	Time 2	4.41	4.29		
	Time 3	4.66	4.58		
	Time 4	4.34	4.43		
Depression					
	Time 1	1.57	1.75		
	Time 2	1.88	2.08		
	Time 3	1.50	1.45		
	Time 4	1.51	1.66		
Anxiety					
	Time 1	1.72	1.69		
	Time 2	1.84	1.99		
	Time 3	1.63	1.45		
	Time 4	1.62	1.63		
Strengths					
	Time 1	59.23	62.22		
	Time 2	60.04	60.84		
	Time 3	61.17	62.23		
	Time 4	60.02	61.09		



Engagement	Time 1	17.25	16.83		
	Time 2	17.05	16.85		
	Time 3	17.59	17.70		
	Time 4	16.42	16.25		
Perseverance	Time 1	17.15	16.40	✓ $\eta_p^2=.022$	✓ $\eta_p^2=.024$
	Time 2	16.88	16.13		
	Time 3	17.78	17.58		
	Time 4	16.87	16.82		
Optimism	Time 1	17.72	17.42		
	Time 2	17.44	17.21		
	Time 3	18.07	17.72		
	Time 4	17.19	16.73		
Connectedness	Time 1	19.81	18.40		✓ $\eta_p^2=.033$
	Time 2	19.51	19.52		
	Time 3	20.42	19.61		
	Time 4	19.35	18.98		
Happiness	Time 1	19.30	18.81		
	Time 2	19.13	18.41		
	Time 3	19.62	19.31		
	Time 4	18.36	17.94		
Bullying Prevalence	Time 1	8.27	7.98		
	Time 2	8.61	7.76		
	Time 3	7.98	7.86		
	Time 4	7.86	7.36		
Victimization	Time 1	8.19	8.81		
	Time 2	8.46	7.67		
	Time 3	7.61	8.39		
	Time 4	7.14	7.35		
Pro-social Tendencies	Time 1	12.40	12.05		✓ $\eta_p^2=.036$
	Time 2	12.27	11.96		
	Time 3	12.62	12.34		
	Time 4	12.35	11.64		
Cyber-bullying	Time 1	4.82	4.60		
	Time 2	4.81	4.83		
	Time 3	4.52	4.14		
	Time 4	5.24	4.95		
Meaning	Time 1	18.76	19.27		✓ $\eta_p^2=.035$
	Time 2	20.28	19.95		
	Time 3	19.61	20.26		
	Time 4	19.88	21.16		



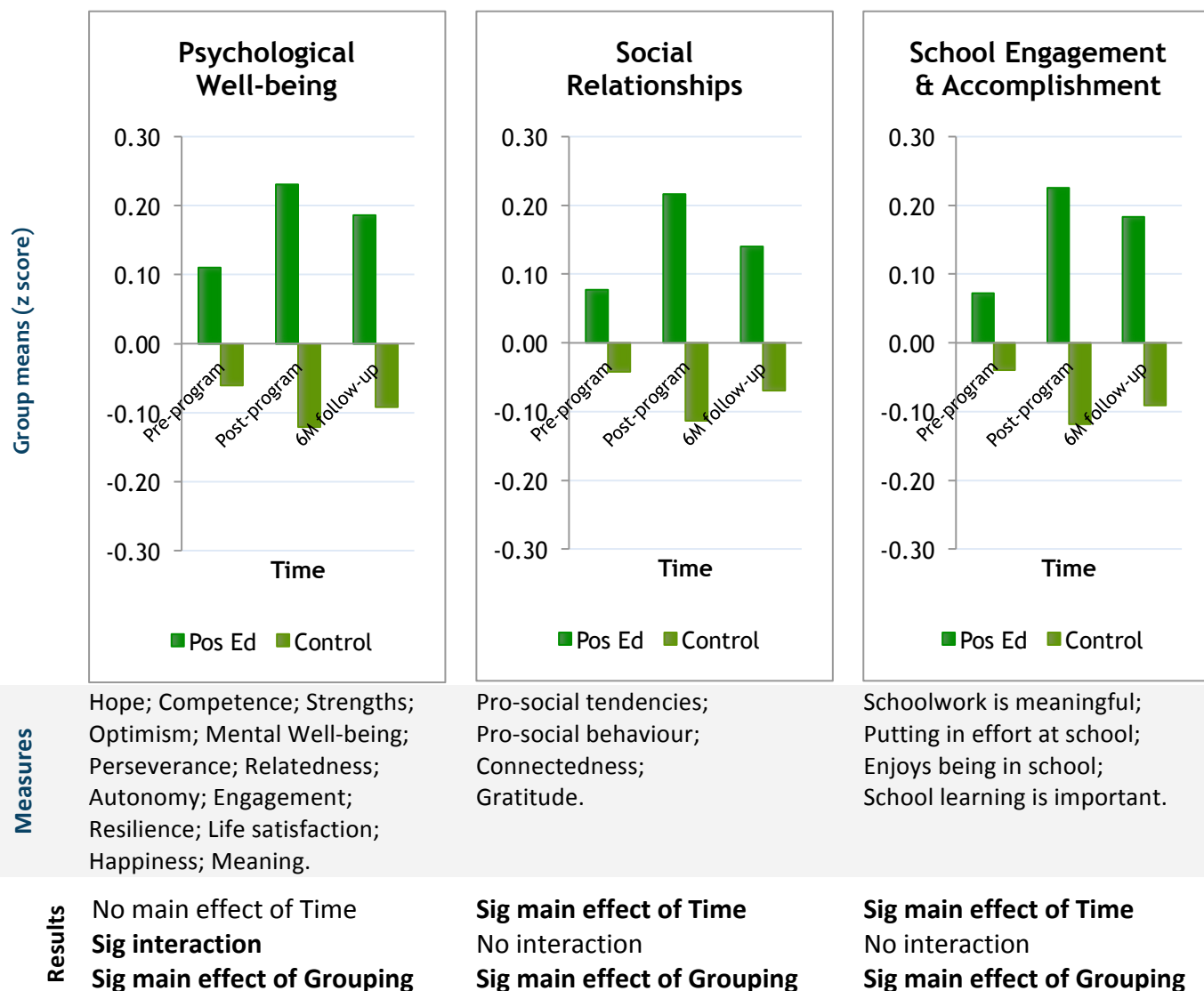
Pro-social Behaviours	Time 1	20.21	19.93	✓ $\eta_p^2=.102$
	Time 2	20.59	20.24	
	Time 3	20.87	21.09	
	Time 4	20.51	20.57	
Gratitude	Time 1	33.49	31.71	✓ $\eta_p^2=.030$
	Time 2	32.70	31.96	
	Time 3	34.32	32.91	
	Time 4	34.07	33.30	
Resilience	Time 1	26.31	26.98	✓ $\eta_p^2=.054$
	Time 2	26.78	30.49	
	Time 3	37.73	38.40	
	Time 4	37.14	36.10	
Mindset-Fixed	Time 1	10.38	10.39	
	Time 2	10.50	11.14	
	Time 3	10.45	11.39	
	Time 4	10.43	10.69	
Mindset-Growth	Time 1	16.54	16.80	✓ $\eta_p^2=.043$
	Time 2	16.33	16.33	
	Time 3	16.05	16.51	
	Time 4	16.25	16.65	
Mindfulness	Time 1	4.00	4.01	✓ $\eta_p^2=.024$
	Time 2	3.92	3.91	
	Time 3	4.06	3.64	
	Time 4	4.12	3.70	

Research Question 4: PEP vs WBAU Group Data

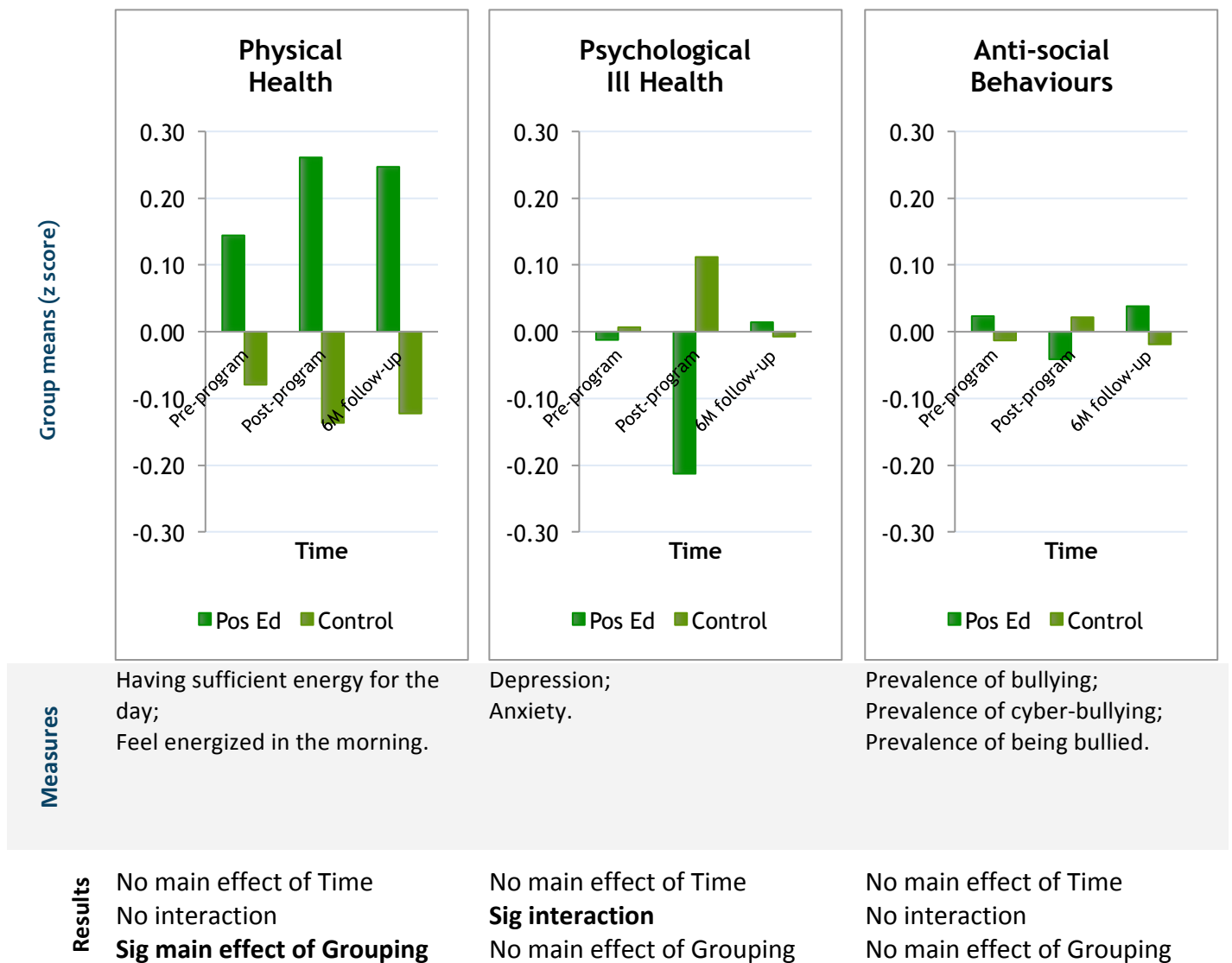
Summary of MANOVA analysis - PEP and WBAU pooled MI means for all indices across three time-points.

Index		Group means		Time	Significant differences	
		PEP (n=51)	WBAU (n=102)		Time*Group	Group
Well-being					✓ $\eta_p^2=.021$	✓ $\eta_p^2=.033$
	Time 1	23.68	22.91			
	Time 2	23.90	22.08			
	Time 3	24.34	22.95			
School Engagement				✓ $\eta_p^2=.032$		✓ $\eta_p^2=.069$
	Time 1	14.23	13.91			
	Time 2	14.07	12.92			
	Time 3	14.63	13.81			
Social Connectedness				✓ $\eta_p^2=.021$		✓ $\eta_p^2=.034$
	Time 1	20.73	20.27			
	Time 2	20.50	19.11			
	Time 3	21.21	20.45			
Physical Health						✓ $\eta_p^2=.060$
	Time 1	8.48	7.75			
	Time 2	8.79	7.43			
	Time 3	8.85	7.55			
Mental Health Risk Factors					✓ $\eta_p^2=.027$	
	Time 1	2.16	2.19			
	Time 2	1.90	2.47			
	Time 3	1.98	1.95			
Social Interaction Risk Factors				✓ $\eta_p^2=.051$		
	Time 1	21.58	21.27			
	Time 2	24.40	25.09			
	Time 3	22.53	21.93			

Variation of scores from group means:



PEP students reported greater levels of social relationships, school engagement and accomplishment across all time-points.



As compared to their non-PEP peers, PEP students reported fewer symptoms of psychological ill health post program.

Summary of ANOVA analyses - PEP and Control group means for all measures across 3 time-points.
(Significantly higher means are highlighted green, lower in red)

Component	Time	Group means		Significant differences	
		PEP (n=51)	Control (n=102)	Time*Group	Group
Mental well-being				✓ $\eta_p^2=.041$	✓ $\eta_p^2=.038$
	Time 1	24.12	23.48		
	Time 2	25.55	22.40		
	Time 3	25.24	23.33		
Satisfaction with life				✓ $\eta_p^2=.070$	
	Time 1	29.51	29.65		
	Time 2	32.43	28.16		
	Time 3	30.96	29.35		
Autonomy				✓ $\eta_p^2=.047$	✓ $\eta_p^2=.030$
	Time 1	21.90	21.75		
	Time 2	22.67	19.78		
	Time 3	22.76	21.70		
Competence					✓ $\eta_p^2=.029$
	Time 1	23.04	22.35		
	Time 2	22.88	20.32		
	Time 3	22.80	21.83		
Relatedness					✓ $\eta_p^2=.036$
	Time 1	23.22	22.62		
	Time 2	23.49	21.26		
	Time 3	23.65	22.48		
Hope				✓ $\eta_p^2=.027$	
	Time 1	3.99	4.01		
	Time 2	4.37	3.78		
	Time 3	4.35	4.02		
Depression					
	Time 1	2.24	2.01		
	Time 2	1.75	2.36		
	Time 3	1.84	2.00		
Anxiety					
	Time 1	2.59	2.28		
	Time 2	1.92	2.71		
	Time 3	2.16	2.03		
Strengths					
	Time 1	57.49	56.84		
	Time 2	58.24	54.79		
	Time 3	58.59	55.25		
Engagement					✓ $\eta_p^2=.037$
	Time 1	17.02	16.31		
	Time 2	17.47	15.25		
	Time 3	16.90	15.71		
Perseverance				✓ $\eta_p^2=.026$	✓ $\eta_p^2=.030$
	Time 1	16.33	16.09		
	Time 2	17.51	14.86		
	Time 3	16.80	15.66		
Optimism					✓ $\eta_p^2=.029$
	Time 1	16.69	16.44		
	Time 2	17.63	15.21		
	Time 3	17.49	15.89		



Connectedness

Time 1	19.49	18.96
Time 2	19.29	17.97
Time 3	19.90	18.82

Happiness

Time 1	17.67	18.11	✓ $\eta_p^2 = .024$
Time 2	18.47	16.78	
Time 3	18.90	17.19	

Bullying Prevalence

Time 1	7.61	7.67	✓ $\eta_p^2 = .045$
Time 2	8.86	9.90	
Time 3	8.16	8.54	

Victimization

Time 1	8.43	7.69	✓ $\eta_p^2 = .030$
Time 2	9.25	8.94	
Time 3	7.92	8.11	

Pro-social Tendencies

Time 1	12.14	12.07
Time 2	12.43	11.94
Time 3	12.06	11.63

Cyber-bullying

Time 1	4.67	4.75	✓ $\eta_p^2 = .048$
Time 2	5.82	6.57	
Time 3	5.25	5.25	

Meaning

Time 1	19.78	18.56
Time 2	20.10	17.88
Time 3	20.06	19.23

Pro-social Behaviours

Time 1	20.90	19.84	✓ $\eta_p^2 = .025$		✓ $\eta_p^2 = .040$
Time 2	20.37	18.11			
Time 3	20.73	19.79			

Gratitude

Time 1	31.78	30.75	✓ $\eta_p^2 = .026$	✓ $\eta_p^2 = .020$	✓ $\eta_p^2 = .033$
Time 2	31.88	27.90			
Time 3	32.35	30.83			

Resilience

Time 1	36.06	33.72			✓ $\eta_p^2 = .049$
Time 2	35.98	31.36			
Time 3	35.80	33.38			

Mindset-Fixed

Time 1	9.49	9.69			✓ $\eta_p^2 = .034$
Time 2	9.14	11.12			
Time 3	9.02	10.51			

Mindset-Growth

Time 1	16.92	15.80	✓ $\eta_p^2 = .061$		✓ $\eta_p^2 = .067$
Time 2	16.08	13.87			
Time 3	17.39	15.66			

Mindfulness

Time 1	3.94	3.93
Time 2	3.98	3.68
Time 3	4.01	3.93

#Note: No significant differences between Pos Ed and Control groups at Time 1.