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Purpose

The medical school learning environment (LE) is crucial for undergraduate medical students' professional development (Hafferty, et al. 1988; Maudsley, 2001). Medical school is difficult and stressful: improving LE can ease unnecessary student burden and facilitate learning.

Each student perceives LE differently. Mismatches between learners and LE can weaken learning (Lindblom-Ylance & Lonka, 1998). In order to improve LE, we must understand how student differences impact their perception of it.

The Ways of Coping Scale (WCS) measures 8 different ways individuals typically deal with stress (Folkman & Lazarus, 1988). The Medical School Learning Environment Scale (MSLES) measures medical student perception of 17 aspects of LE (Rosenbaum, et al., 2007).

We hypothesize that students with different WCS subscores would rate aspects of LE differently. The pattern of WCS and LE perception should provide a meaningful framework for improving LE.

8 Ways of Coping: How do you respond to adversity?

Self Controlling: Keep your feelings from influencing the situation. Includes items such as "I tried to keep my feelings to myself" and "Kept others from knowing how bad things were."

Distancing: Detach yourself from the situation. Includes items such as "Made light of the situation; refused to get too serious about it" and "Didn't let it get to me; refused to think about it too much."

Escape Avoidance: Hope things will turn out fine. Includes items such as "Wished that the situation would go away or somehow be over with" and "Had fantasies or wishes about how things might turn out."

Accepted Responsibility: Acknowledge your role in the situation. Includes items such as "Criticized or lectured myself" and "Realized I brought the problem on myself."

Confrontive Coping: Aggressively and pro-actively manipulate the situation. Includes items such as "Stood my ground and fought for what I wanted" and "I expressed anger to the person(s) who caused the problem."

Seeking Social Support: Gather information from other people. Includes items such as "Talked to someone to find out more about the situation" and "I asked a relative or friend I respected for advice."

Positive Reappraisal: Construct meaning of the situation in terms of personal growth. Includes items such as "Changed or grew as a person in a good way" and "Found new faith."

Planful Problem-Solving: Deliberative, conscious behavior. Includes items such as "I knew what had to be done, so I doubled my efforts to make things work" and "I made a plan of action and followed it."

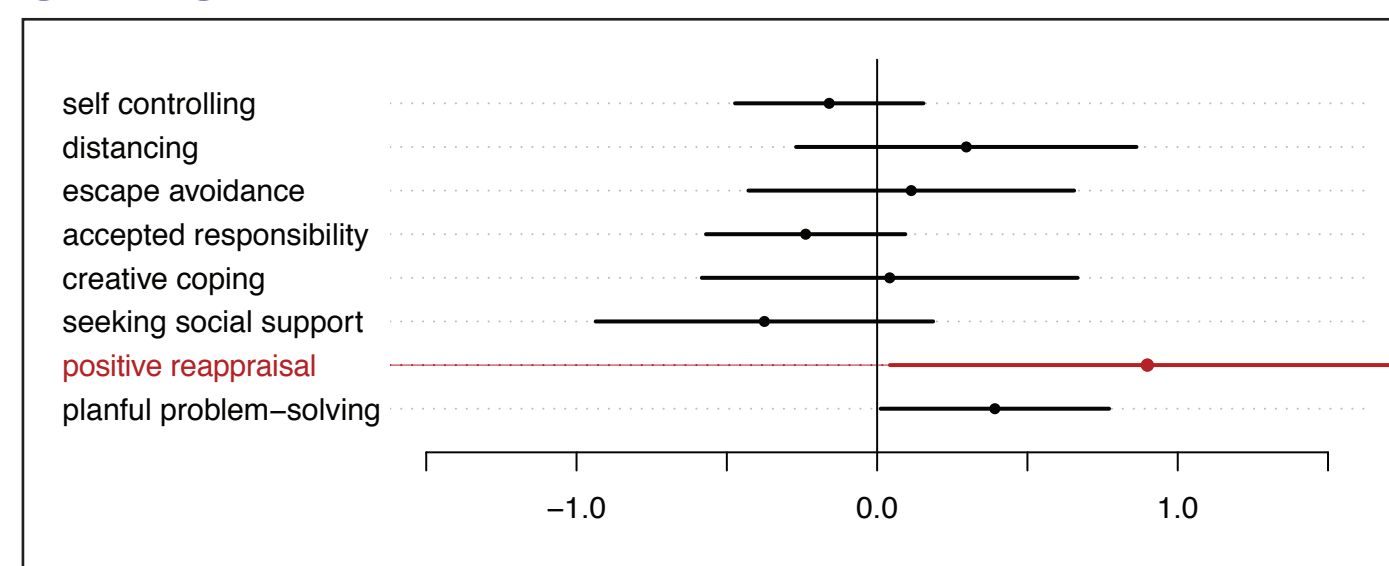
Data, analysis and plots

155 Undergraduate medical students from the classes of 2014 and 2015 at the University of Michigan Medical School fully completed and agreed to research use of their data from the American Medical Association's Learning Environment Survey. The WCS was part of a battery of psychosocial scales administered at matriculation. The MSLES was administered in the spring of their M1 year.

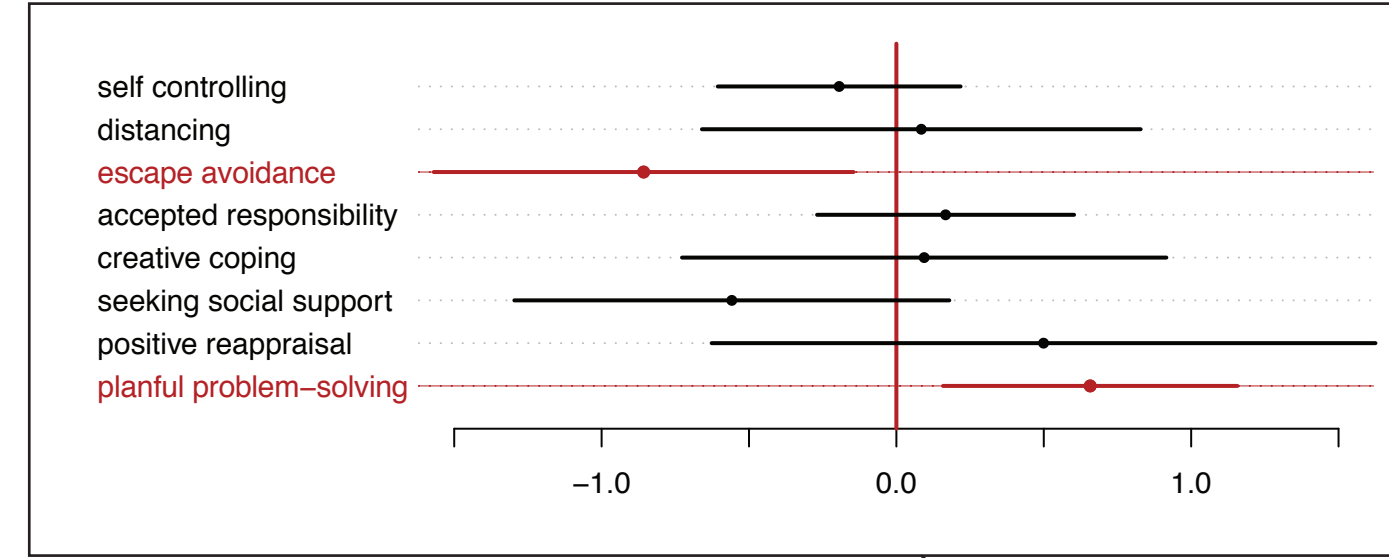
Principal Components Analysis (PCA) found 2 factors on the MSLES which, when varimax-rotated loaded on "intellectual" and "social" aspects of the learning environment. The central scatterplot below shows the 17 MSLES items in this 2-dimensional space.

8 WCS subscores were computed for each student and used as predictors in 17 regression models: one for each MSLES item. Nine items had significant predictors ($\alpha = .05$). Parameter estimates (with 95% confidence intervals) are reported as Cleveland dot plots connected to the relevant MSLES item. Significant parameters are marked in red.

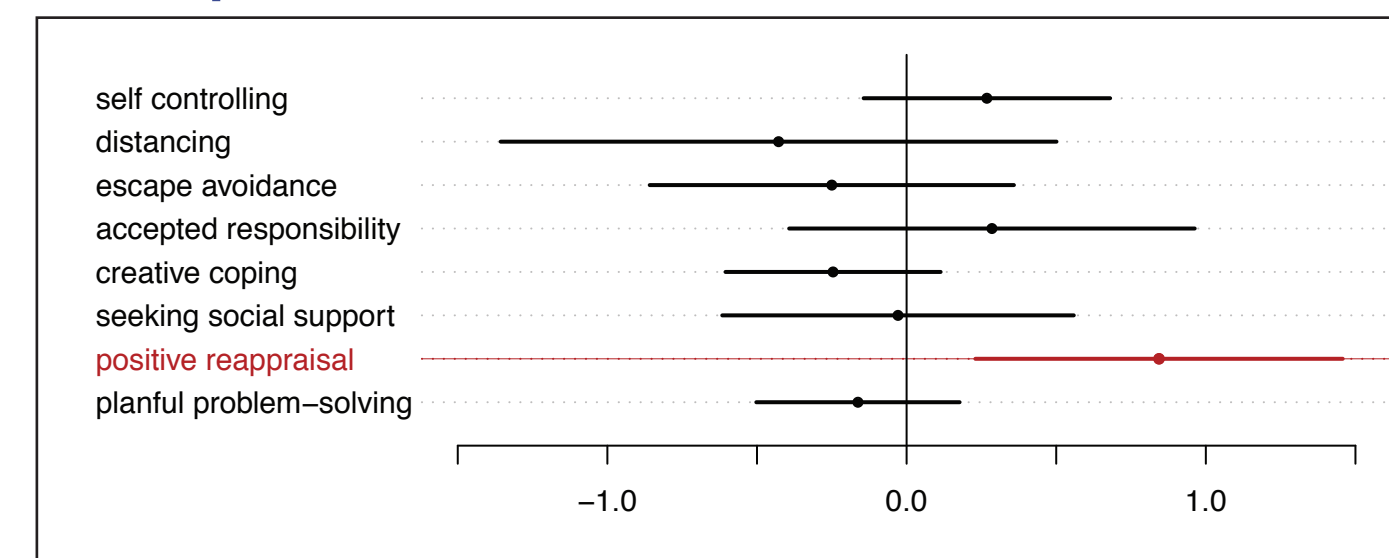
Positive Reappraisers perceive more students getting to know each other well.



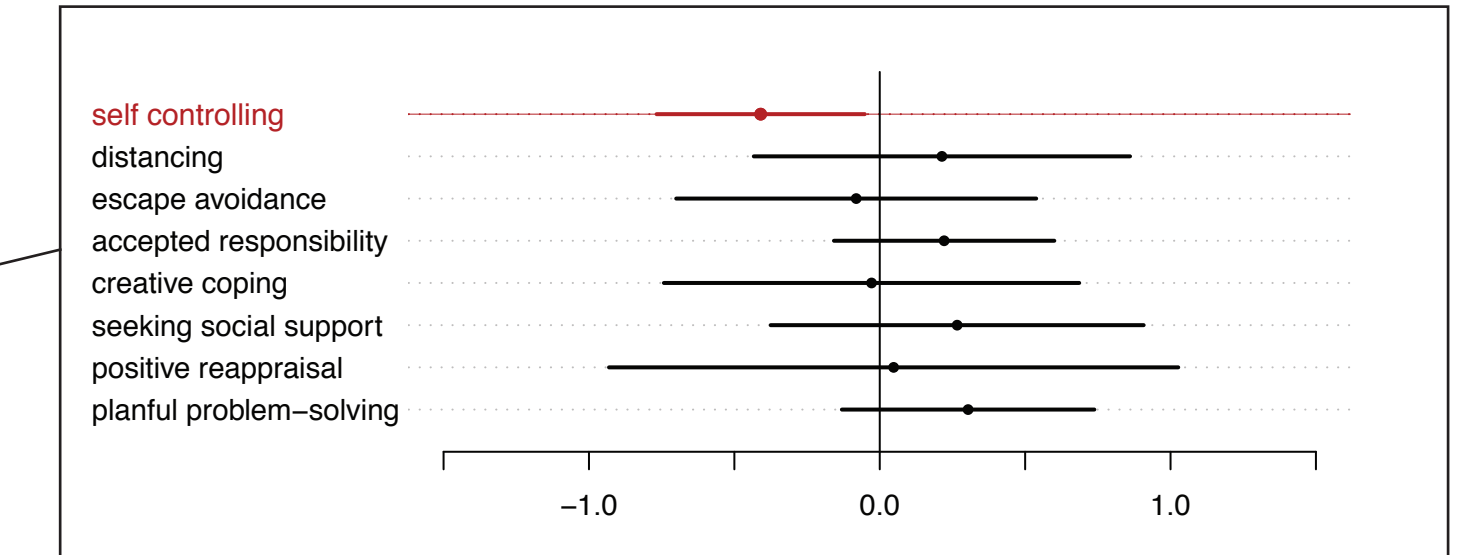
Planful Problem-Solvers perceive more informal student activities. Escape-Avoiders perceive fewer.



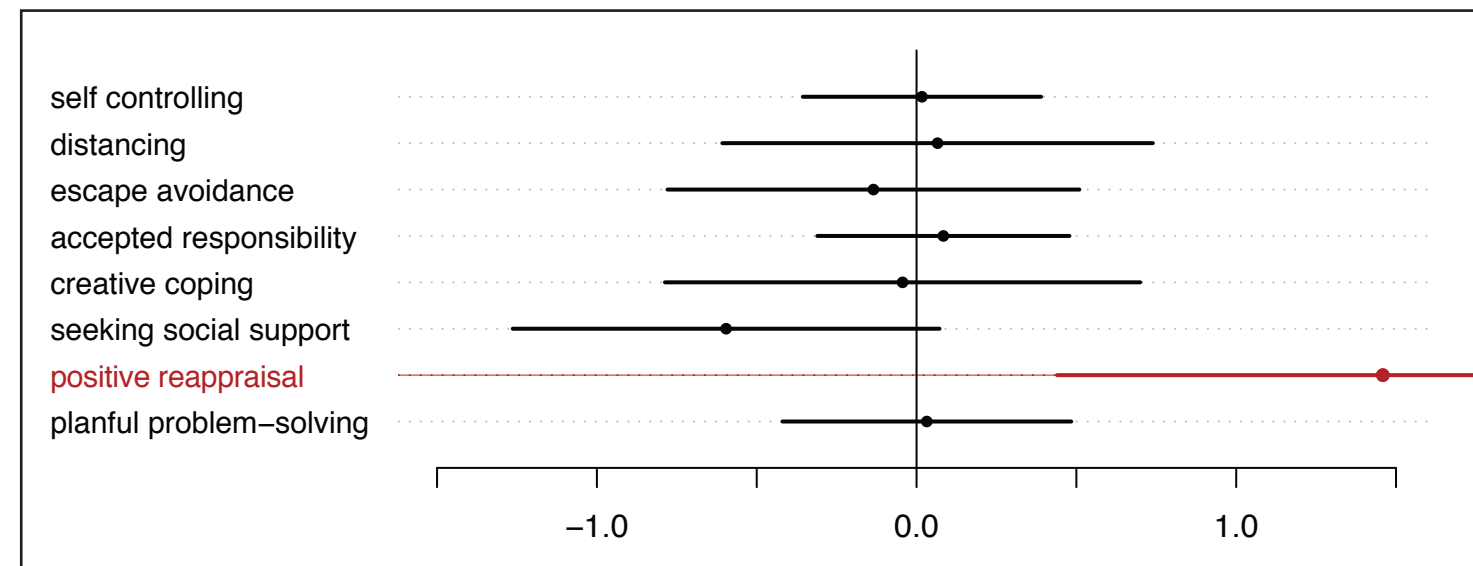
Positive Reappraisal students perceive more possibilities for outside interests.



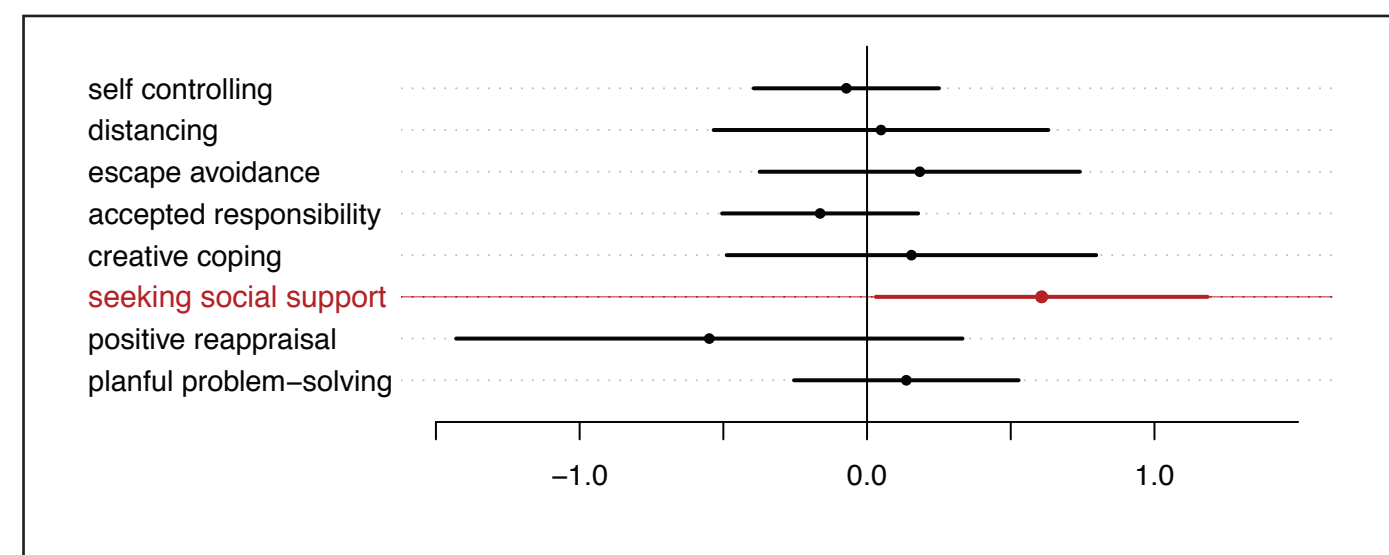
Self-Controlling students perceive less meaningful action to student complaints.



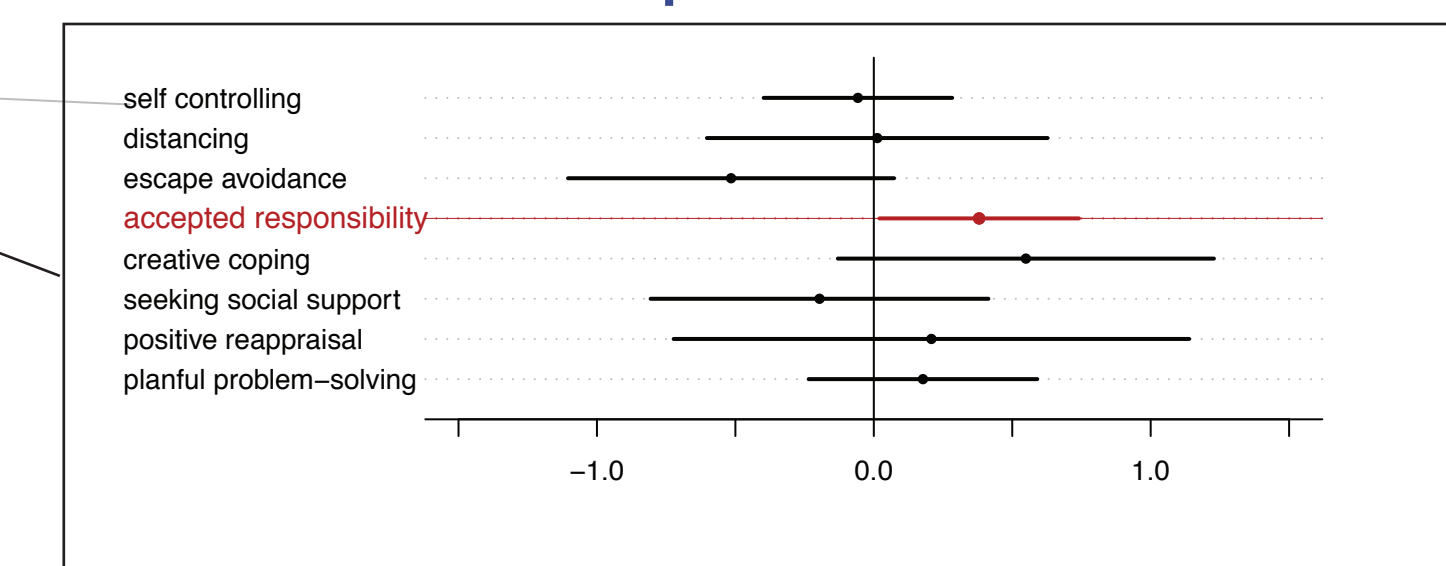
Positive Reappraisers perceive more students assisting each other.



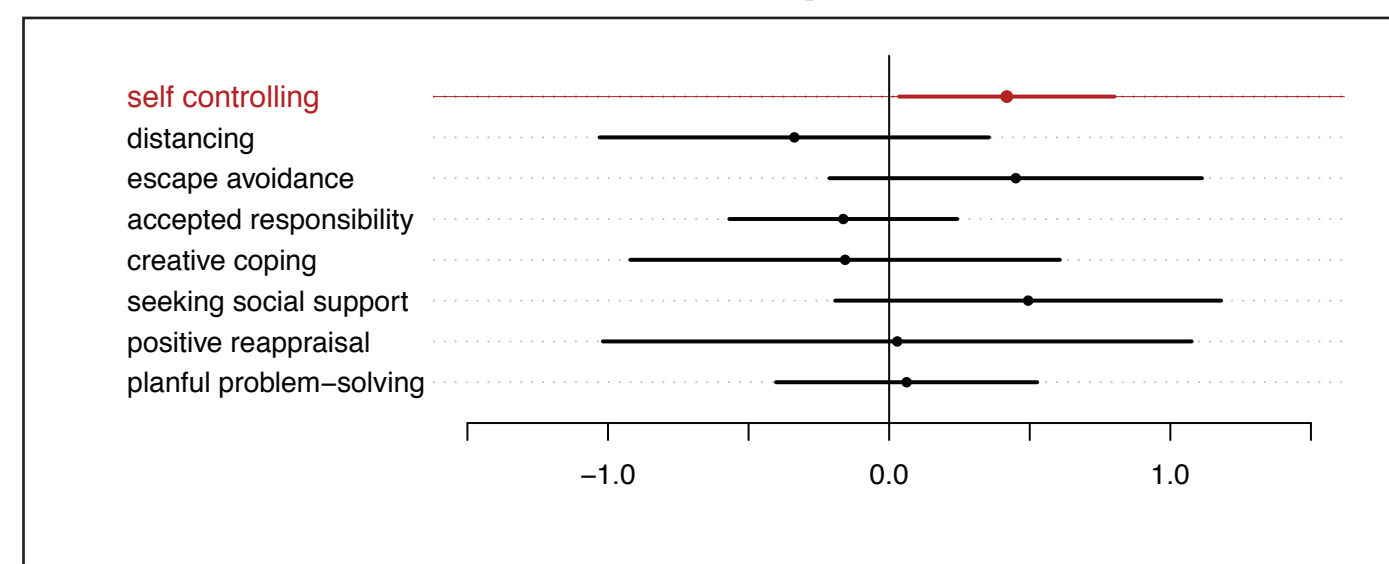
Students who Seek Social Support perceive more intense competition for grades.



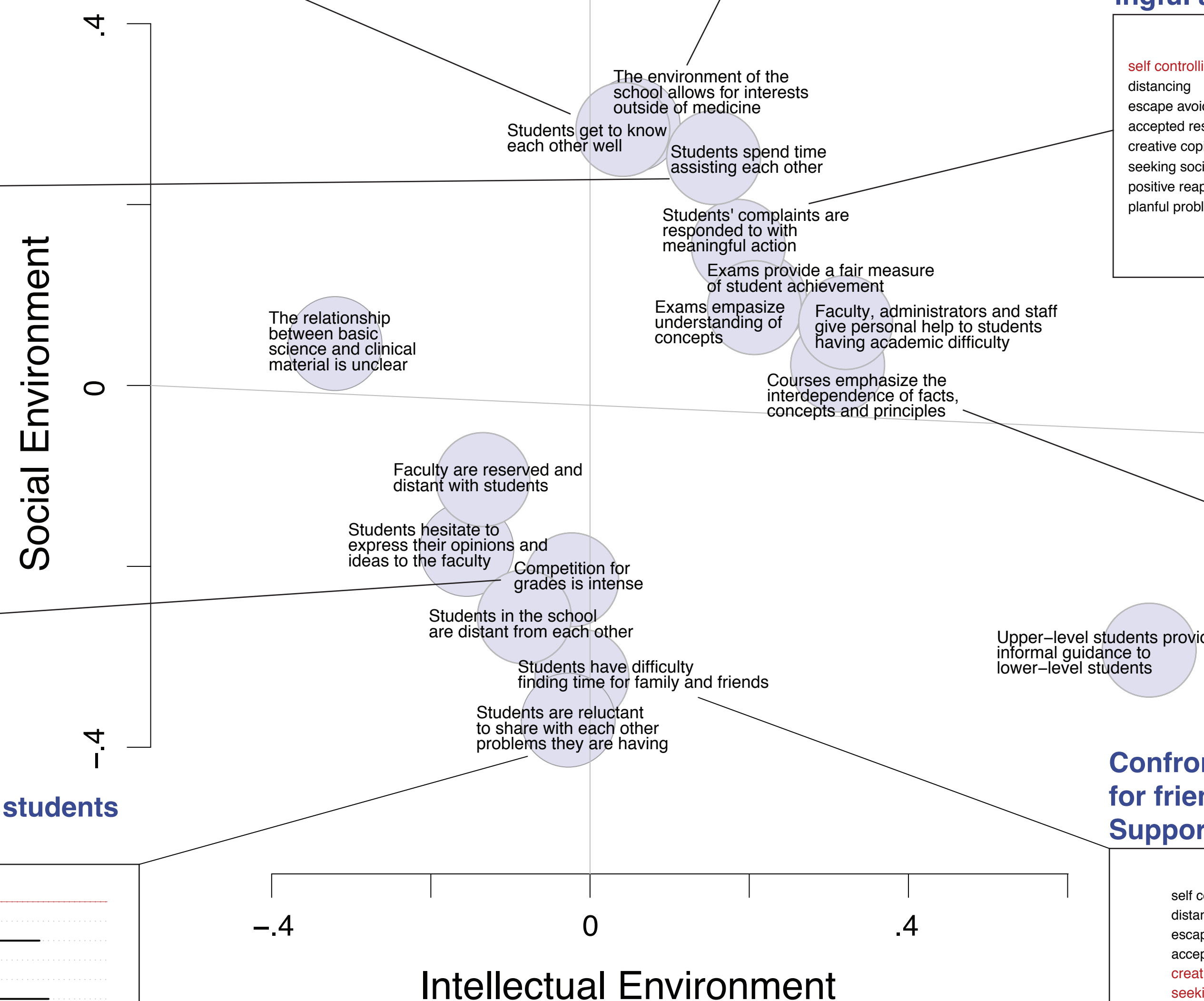
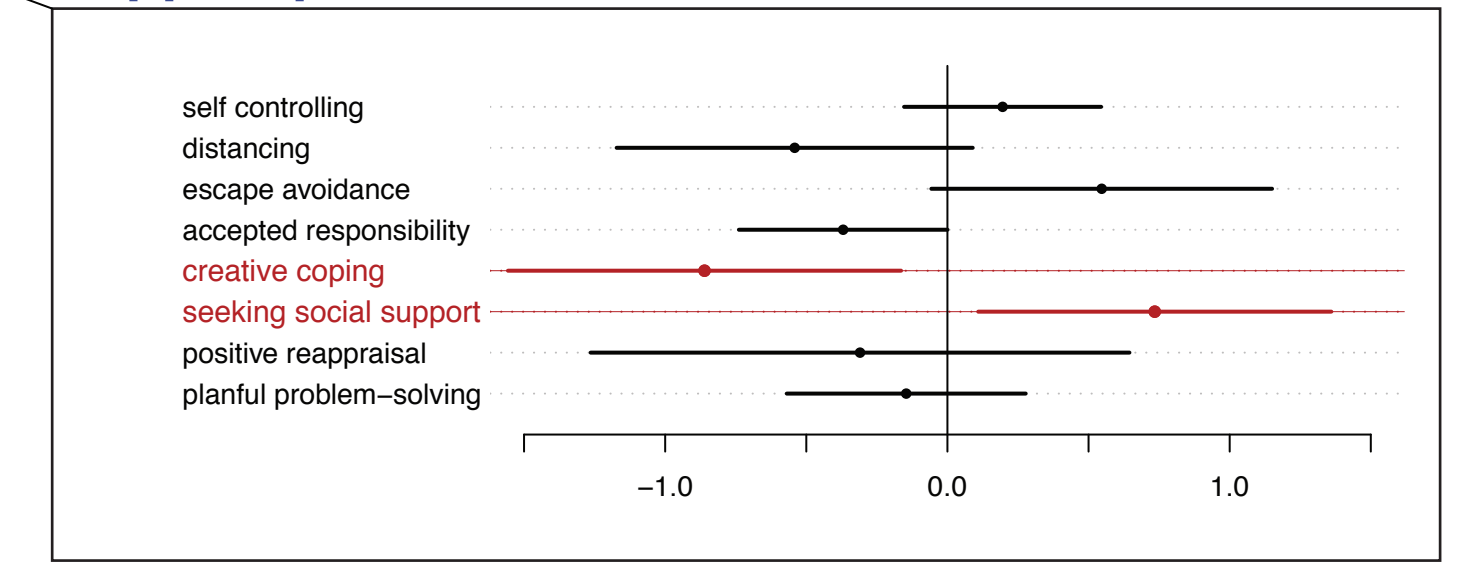
Students who Accept Responsibility perceive courses as more comprehensive.



Self-Controlling students perceive that students are more reluctant to share problems.



Confrontive Copers perceive it easier to find time for friends and family. Students who Seek Social Support perceive it more difficult.



Conclusions

LE is not perceived the same by everyone, but in general appears to have 2 orthogonal aspects: one intellectual and one social. The intellectual aspect involves help from higher-ups (administrators and upper-level students) and clarity of learning objectives and assessments. The social aspect primarily involves peer-interactions, especially interactions outside the classroom.

Students are more critical of aspects of LE that meet their preferred ways of dealing with stress: social support-seekers feel more grade competition and have more difficulty finding time for friends and family; self-controllers perceive more student reticence and less

meaningful administrative action to student complaints. The direction of these effects is important: students want more of the coping opportunities they prefer: e.g. escape-avoiders want more informal social activities.

Positive reappraisal is associated with a more pleasant perceived LE. These students find more opportunities for outside interests, see students helping each other and getting to know each other well. These students may simply have sunny dispositions generally, though this relative optimism does not seem to extend to the intellectual aspects of LE.

Future Directions

The AMA's LES is a multi-institutional study. These same data (and more) have been collected for thousands of medical students in the U.S. and Canada. These same analyses could be applied at other institutions to see if the same patterns observed at Michigan hold in other LE's. Moreover, other aspects of LE's (the existence of Learning Communities, student body size and diversity, certain admissions policies, etc.) could be tested for their differential impact on student experiences.

The limitations of sample size and multiple comparisons require that we treat these results as observational and descriptive. Nonetheless, they

can form the basis of an individual differences model of LE quality improvement.

Tying these results to student academic performance would suggest which aspects of this model are most important for prescribing LE improvement. If social support-seekers who perceive more grade competition, for example, are more likely to have academic difficulties, a change in grading policy could be a low-cost way to preemptively avoid remediation costs.

Student experience in medical school should not be a barrier to achievement. Improving LE requires how LE is perceived and by whom.

References

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