Does adolescent anxiety and depression go hand-in-hand?

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Inside-Out "In de ban van angst en depressie" April 2012

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How are adolescent anxiety and depression symptoms related?
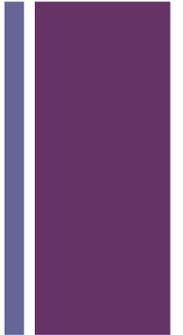
- There are three inter-related issues.

- First, strong comorbidity between adolescent anxiety and depressive disorders (between 15% to 50%).

- Second, it has been shown that comorbid anxiety and depressive disorders can predict one another; the presence of anxiety disorder symptoms predicts an increase in depressive symptoms and vice versa.

- This leads to the third point: etiology

Etiology (who causes what?)

- Since adolescent anxiety and depression are strongly comorbid and can predict each other's developmental course, it is questioned the role each has on one another's etiology.

- In recent years, some researchers have questioned whether adolescent anxiety and depression are two distinct syndromes or are simply the same disorder that can be viewed on a severity continuum.

- If they are on the same continuum, it would help to explain the comorbidity and prediction findings of previous studies.

The same disorder on a continuum
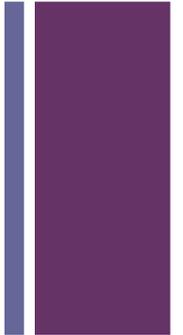
- There is much debate as to this issue. The arguments can be broken down to two camps.

- One camp is the *general factor approach*

- This approach holds that anxiety and depression is one factor with three expressions: physiological hyperarousal, low positive affect and mixed anxiety and depression.

- This is also known as the tripartite model.

Two distinct disorders

- The other camp can be called the *category approach*.

- This approach suggests that while adolescent anxiety and depression might appear the same at low levels, that when symptoms reach diagnostic thresholds that they can be differentiated as distinct disorders.

- The category approach is what is used by the DSM-IV-TR.

So why the debate?

- It could be argued that one reason for this debate (the same vs. different disorders) is because all three interrelated issues have been studied in isolation from one another.

- One manner this debate could help to be resolved is if all three issues (comorbidity, prediction and the phenomenology) are addressed in one and the same design.
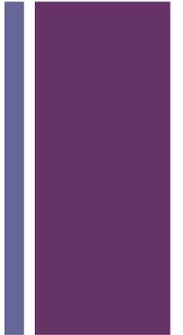
Goals of this study
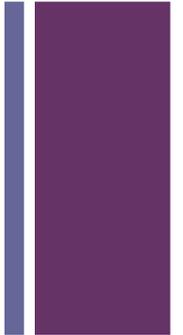
- Using Structural Equation Modeling (SEM) adolescent anxiety and depressive symptoms will be explored as to:
    - 1. The phenomenology (same vs. different)
    - 2. The comorbidity
    - 3. The prediction

- Examination will also be given to early and middle boy and girl cohorts since they have been found to differ from one another in previous studies.

Sample
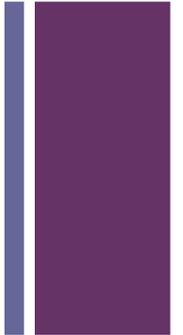
- Five waves with yearly data collection.

- Adolescents from the general community to help prevent referral that can occur in clinical samples.

- Two cohorts of boys and girls:
  - Early adolescent (N=923; Mean age=12.4; Girls=49%)
  - Middle adolescent (N=390; Mean age=16.7; Girls=57%)

- From 12 different Dutch junior high and high schools.

Instruments
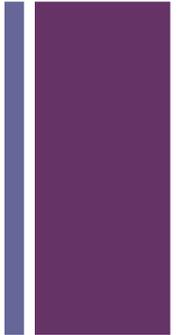
- Screen for Child Anxiety Related Emotional Disorders (SCARED; a self-report questionnaire for measuring symptoms of **five** anxiety disorders in children and adolescents):
  - Generalized Anxiety Disorder (GAD)
  - Panic Disorder (PD)
  - School Anxiety (or: school refusal) (SA)
  - Separation Anxiety Disorder (SAD)
  - Social Phobia (SP)

- Children's Depression Inventory (CDI) is a widely utilized self-report questionnaire of depressive symptomology in children and adolescents.

Indication of severe pathology
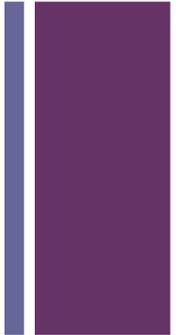
- The 1,313 adolescents of the sample come from the general community (not clinics)

- Yet this doesn't preclude them from having severe symptoms.

- So "**at-risk** for anxiety disorder" cohorts were created for each of the five anxiety disorders.

- (A similar "**at-risk** for depression disorder" cohort was too small for SEM; $N < 20$.)

+ Method
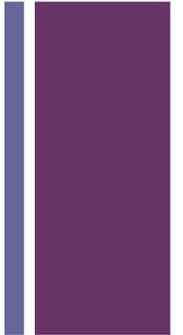
- Latent Growth Modeling (LGM) was used.

- In LGM intercepts (i.e., initial symptom score severity) and slopes (i.e., growth in symptom score) are identified.

- Two models were tested:
  - General Factor (or: *One Factor Growth Model)*
 - Two Distinct Disorders (or: *Parallel Growth Model)*

+ Growth models
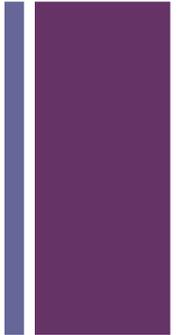
- One General Factor assumes that anxiety and depressive disorder symptoms are indicative of one general factor.

- A Parallel Growth Model assumes that they are two parallel processes, each with their own unique developmental growth parameters.

- Then, after determining the best fitting model, the comorbidity and the prediction of the anxiety and depression symptoms were analyzed in respect to the model.

- These two models will now be presented.

One Factor Growth Model
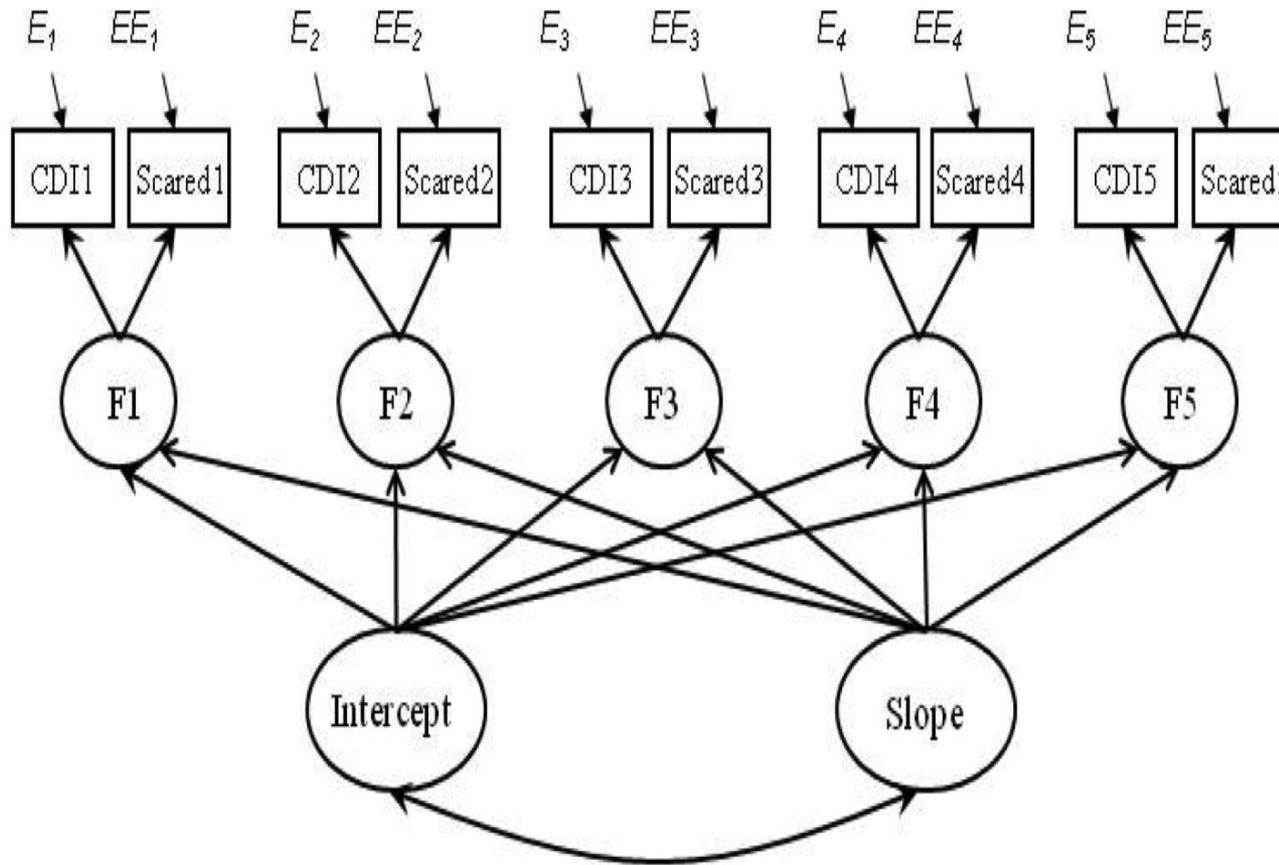
Parallel Growth Model
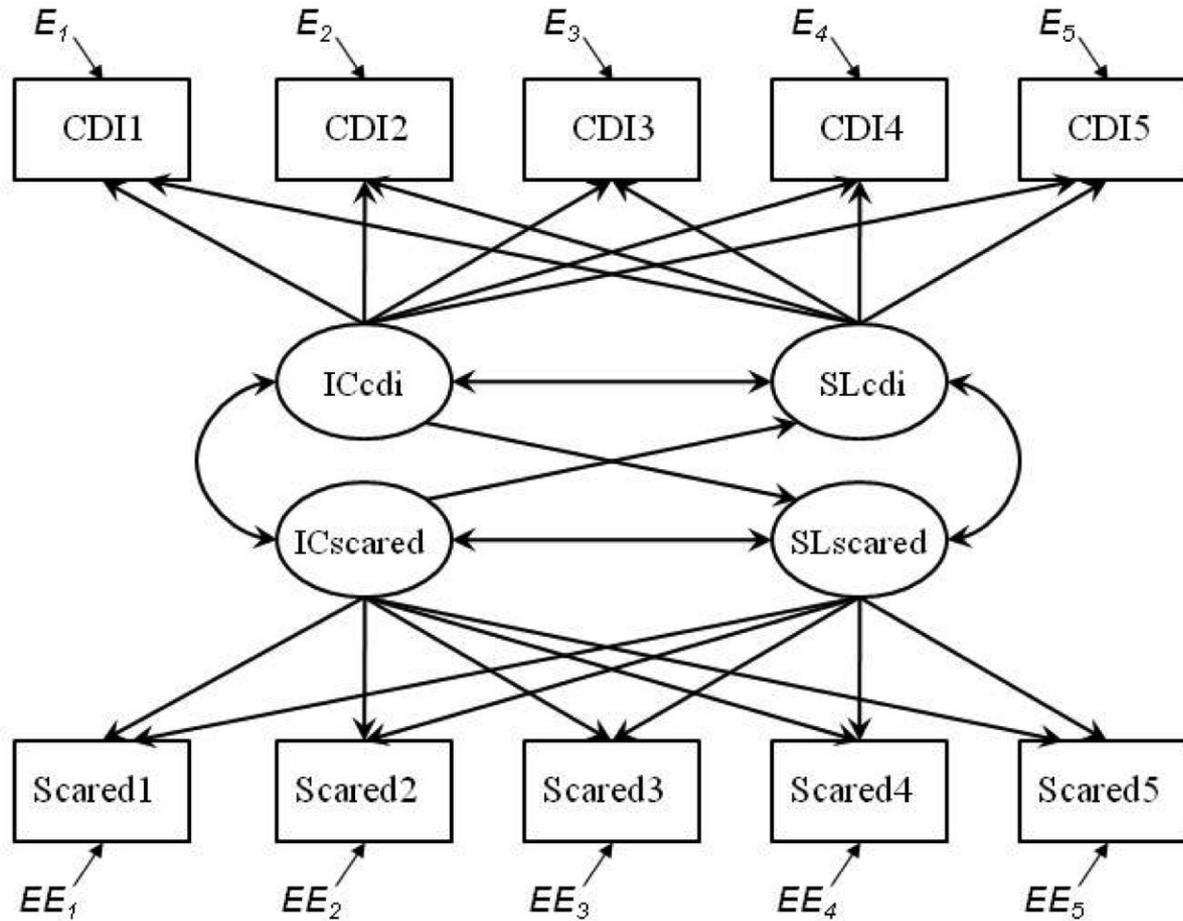
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Model fit statistics

Model	χ^2	df	p	CFI	RMSEA	90% CI of RMSEA
Model 1: One Factor Growth Model (OFGM)						
GAD	1779.09	40	<.001	.776	.182	.175 - .189
Panic	1259.57	40	<.001	.786	.152	.145 - .160
School	826.48	40	<.001	.847	.122	.115 - .130
Separation	1364.29	40	<.001	.714	.159	.152 - .166
SP	2158.43	40	<.001	.630	.201	.194 - .208
Model 2: Parallel Growth Model (PGM)						
GAD	93.92	36	<.001	.993	.035	.026 - .044
Panic	94.26	36	<.001	.990	.035	.027 - .044
School	104.08	36	<.001	.987	.038	.030 - .047
Separation	105.64	36	<.001	.985	.038	.030 - .047
SP	105.21	36	<.001	.988	.038	.030 - .047

One Factor or Parallel Growth?
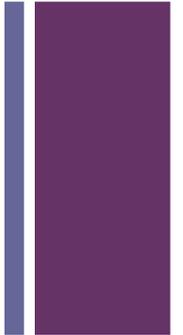
- To quickly summarize the previous table, the Parallel Growth model had a much better fit than the One Factor model in two ways:

- The Comparative Fit Index (CFI) had better fits for the Parallel Growth model
  - CFI ranges: Two factor: .98–.99; One factor: .63–.85

- The Root Mean Square Error of Approximation (RMSEA) had better fits for the two factor model
  - RMSEA ranges: Two factor: .03–.04; One factor: .12–.20

Comorbidity of anxiety and depression symptoms
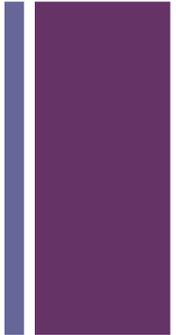
- Additional analysis showed strong correlations between the intercept of depressive symptoms with the intercepts of the five anxiety scales (range: 0.45 to 0.76; ps < .001).

- The same applied to the corresponding correlations of the slope values (range: 0.32 to 0.71; ps < .001).

- Generally, these results demonstrate that both the depression scores and anxiety scores are strongly associated with one another, both momentarily and longitudinally.

At-risk vs. healthy adolescents

- Having found that adolescent anxiety and depression are best described by the Parallel Growth Model (two distinct disorders).

- And also findings that adolescent anxiety and depression symptoms in this model are highly correlated (co-morbidity).

- We now explored if the Parallel Growth Model had a good fit for the at-risk and the healthy adolescent cohorts (before exploring if anxiety and depression disorder symptoms would **predict** one another).
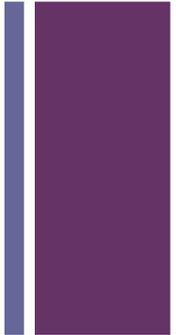
Parallel Growth Model Multigroup fit statistics

Model	χ^2	df	p	CFI	RMSEA	90% CI of RMSEA
Model 3a: Multigroup PGM: Fixed Growth Parameters						
GAD	855.34	236	<.001	.913	.045	.042 - .048
Panic	1352.03	236	<.001	.770	.060	.057 - .063
School	1190.77	236	<.001	.788	.056	.052 - .059
Separation	1135.64	236	<.001	.796	.054	.051 - .057
SP	1043.97	236	<.001	.837	.051	.048 - .054
Model 3b: Multigroup PGM: Free Growth Parameters						
GAD	480.41	212	<.001	.977	.031	.027 - .035
Panic	694.19	212	<.001	.901	.042	.038 - .045
School	595.16	212	<.001	.935	.037	.034 - .041
Separation	637.45	212	<.001	.904	.039	.036 - .043
SP	573.93	212	<.001	.927	.036	.033 - .040

Multigroup findings

- We found that the multigroup model fits based on free growth parameters had better fits than the fixed growth parameters.

- Because the free growth parameters model had the best fits, (which allows for examination of these two groups separately) we then examined if anxiety and depression **predicted** one another, first for the healthy adolescent cohorts and then for the at-risk cohorts.
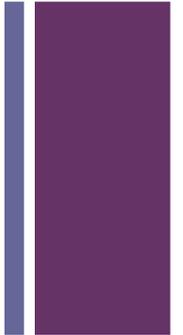
Healthy adolescent cohorts (Prediction)
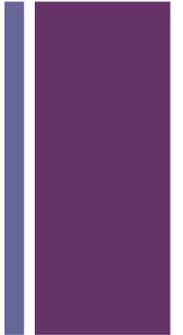
- While predictive, for the healthy adolescent cohorts, anxiety and depression symptom slope (SL) growth generally remained stable compared to their initial (IC) symptom scores.

- Additionally, the symptoms of one disorder do not produce much growth in the symptoms of the other disorder (IC → SL).

- Hence, the healthy adolescent cohorts do not have much anxiety and depressive symptoms to start with and this continues to stay the same over time.

At-risk cohorts (Prediction)
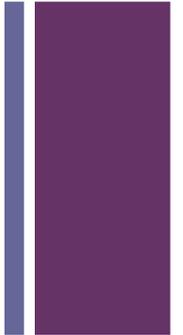
- Again, while predictive, for the adolescents at-risk for developing anxiety disorders, their high levels of initial symptom severity (IC) decline (SL) rapidly over time.

- For most of these adolescents, decline in anxiety and depressive symptoms is generally the norm.

- However, it is those at-risk adolescents who have the highest anxiety symptom severities that are most vulnerable to increase in depression symptoms (IC → SL).

Some clinical implications from the prediction findings
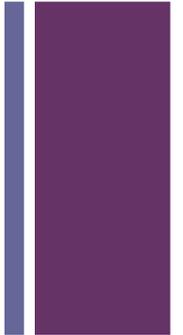
- While previous studies have found adolescent anxiety and depressive symptoms increase each other's severity, these findings suggest that the at-risk adolescents with extremely high symptom severities might be most affected by this occurrence.

- Hence, these adolescents could potentially be best targeted for early prevention/treatment programs that focus on both anxiety and depressive symptoms.

- Conceivably, RCT designs of either anxiety or depression treatment should not exclude individuals with comorbid symptomology.

Some implications for DSM-V
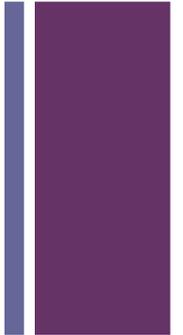
- In the discussions surrounding the upcoming DSM-V, some have suggested grouping anxiety and depression together on a single continuum (such as is done with the Child Behavior Checklist [CBCL]).

- However, these findings suggest that while anxiety and depression are strongly comorbid and predict one another, they are two independent factors that develop parallel to one another.

- Hence, the present-day DSM-IV-TR nosology of adolescent anxiety and depressive symptoms also applies to adolescents, suggesting a change to a continuum might be misplaced.

+ In conclusion
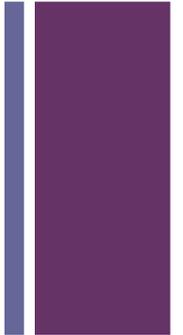
■ These findings are supportive of a position held by Angold and Costello (2009) who state that while there is overwhelming evidence that adolescent anxiety and depression are related, additionally state "But linkage is not the same as identity."

■ Angold, A., & Costello, E. J. (2009). Nosology and measurement in child and adolescent psychiatry. *Journal of Child Psychology and Psychiatry, 50,* 9-15.

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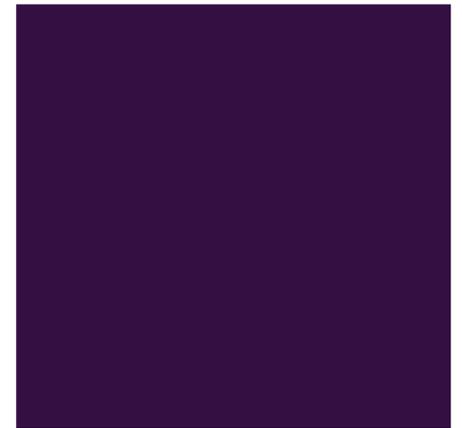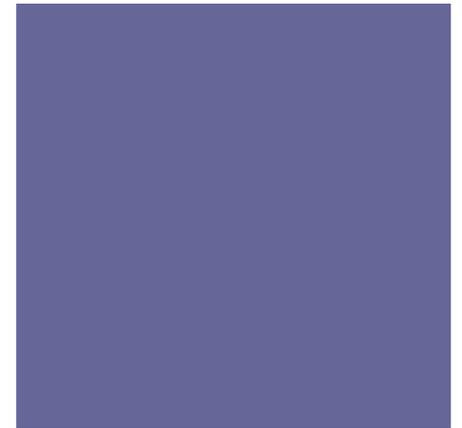
Thank you for your attention!

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