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PSYCHOPATHOLOGY AND DEVELOPMENT: TRAJECTORIES OF PSYCHOPATHOLOGY
FROM EARLY ADOLESCENCE THROUGH YOUNG ADULTHOOD

Marc S. Schulz*, Stuart T. Hauser**, Joseph P. Allen***, Judith A. Crowell****, J. Heidi Gralinski-Bakker**, Deanna Hladek*, Karin Best*****, and Robert J. Waldinger**

* Bryn Mawr College

** Judge Baker Children's Center and Harvard Medical School

*** University of Virginia

**** SUNY Stony Brook

***** UCLA

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The focus of our research is on how current and lifetime episodes of psychopathology influence adaptive functioning in early adulthood. Today, I would like to give you an overview of some of our recent efforts to incorporate a more dynamic and individual – centered approach to this task. Our approach emphasizes pathways or trajectories of psychopathology over time rather than static, one-point-in-time snapshots of disorder. Let me illustrate this emphasis concretely with examples drawn from two of the participants in the research I will be talking about today. [Figure 1 about here].

This is a timeline for one participant in our study. On the x axis time in years is displayed, and on the y axis are types of disorders. The visible window or "SNAPSHOT" displays disorders that are present around age 32, which is the time of the early adult assessments in the study I will be presenting. As you can see from the figure, this person was found to have Antisocial Personality Disorder and Substance Use Dependence at age 32. Let's take a quick look at another individual from the study. [Figure 2 about here]. This person is also experiencing current psychopathology, although of a different sort. This person has Generalized Anxiety Disorder and Major Depression. Knowing something about the current psychopathology of both individuals is likely to help us understand their current functioning. But, it would sure be nice to know something about their history of psychopathology and whether their current difficulties reflect continuities from the past or a clear change in functioning.

Let's look at the first subject again, this time with our gray box removed. [Figure 3 about here]. It turns out that this individual has been struggling with Substance Dependence since age 13 and has an early history of ADHD and Oppositional Defiant Disorder. His current difficulties are likely a reflection of this lifetime history.

It turns out that the second participant – the one with Generalized Anxiety Disorder and Depression at age 32 – did not have a major history of pathology, but seemed to be struggling only in his or her 30s. [Figure 4 about here]. The question we will be addressing is whether the different pathways of pathology through time have different implications for adaptive functioning.

Following individuals over time provides the best opportunity to observe and identify these pathways. Studies of the course of psychopathology from childhood into the thirties, however, have been very rare. The long-term, prospective longitudinal designs needed to generate these kinds of data are very costly. In this study, we investigate the utility of using retrospectively obtained diagnoses to trace pathways of pathology over time.

This study uses data gathered over 20 years on 111 individuals including prospectively collected data on symptoms to examine the accuracy of retrospectively obtained diagnostic information before investigating how these retrospective diagnostic data were related to current functioning.

We had two basic objectives in this research: First, we wanted to investigate the accuracy of a structured diagnostic interview for adults in obtaining information on *past* episodes of psychopathology.

Second, we wanted to develop a meaningful way to summarize childhood and young adult diagnostic data into pathways of pathology that told us something about (1) the road participants had traveled to their early adult assessments and (2) would help us predict their functioning in adulthood.

Retrospective Recall

In this study, we used diagnostic information gathered retrospectively from an interview at age 32. This reliance on recall raises concerns about the accuracy of this information. Previous research on the accuracy of recall for psychopathology and other significant events indicates that information can be obtained reliably if researchers take active steps to facilitate and verify recall. For example, in our study, we began diagnostic interviews by inquiring about significant events and transitions in a person's life history to provide a context for recalling the timing and content of periods of difficulty.

METHOD

Participants

The 111 participants in our research were a sub-sample of 146 participants first seen in 1978. On entering this longitudinal study at age 14, participants were members of primarily Caucasian middle- and upper-middle-class families. 48 of the 111 studied in this paper were non-psychotic, non-retarded psychiatrically hospitalized adolescents and 63 were freshman from a local high school matched on age,

gender, birth order and number of siblings. The hospitalized adolescents had a range of psychopathology with disruptive behavior disorders and mood disorders predominating.

Assessment and Measures

During adolescence, participants completed extensive assessments annually. During the fourth year of the study, a representative subset of 58 participants completed the Youth Self Report (YSR, Achenbach & Edelbrock, 1981) a widely used checklist of problem behaviors and psychiatric symptomatology. The internalizing and externalizing dimensions of the YSR were used in analyses. At age 25, 98% of all of the original adolescent participants were assessed again. This assessment included the SCL-90 (Derogatis, 1983), a widely used self-report checklist of psychiatric symptomatology. For the analyses in this study, we used the depression and hostility subscales.

Current assessment of these same participants at age 32 is still underway. At the age 32 assessment, a structured diagnostic interview, the SCID, was administered to obtain current and lifetime psychiatric diagnoses. Current functioning, at age 32, was assessed by two methods using different reporters. First, global self-esteem was assessed using Harter's Adult Self-Perception Profile (Harter, 1986). It is measured by items such as liking the way one is leading one's life, being pleased with oneself, and liking the kind of person one is. Second, interviewer based assessments of functioning were obtained using the Social Adjustment Scale (SAS, Weissman & Paykel, 1974), a semi-structured interview focusing on social competence in multiple domains. Interviewers rate participants' functioning in each domain and then give a final overall rating of functioning across domains. Higher scores on this measure reflect poorer adaptation. [Figure 5 about here].

The ***Structured Clinical Interview for DSM-III-R or SCID*** was used to assess current and lifetime episodes of psychopathology. The SCID is a semi-structured interview used for making major DSM Axis I diagnoses. The SCID is designed to approximate the differential diagnostic process executed by an experienced clinician. The interviewer makes a clinical judgment as to whether a diagnostic criterion is met. Interviewers carefully follow up vague or unconvincing responses to clarify their own judgment about whether the criterion has been met or not.

The standard SCID inquires about both the current and the worst previous experience of symptomatology for major Axis I disorders. Because of our interest in obtaining lifetime profiles of psychopathology, we amended the SCID in several important ways, including the following:

1. We added queries about the initial occurrence of major disorders.
2. We added modules for childhood disruptive behavior disorders that are not part of the standard SCID.
3. We included a module to assess Antisocial Personality Disorder so that we could capture lifetime pathways of disruptive behavior problems.

SCID interviewers were carefully selected, rigorously trained, and closely supervised by expert clinicians. A clinical psychologist or board certified psychiatrist with extensive diagnostic experience reviewed all interviews and diagnoses in research diagnostic conferences. All of the diagnoses used for the analyses in this paper have gone through this extensive review process. It is the "expert" diagnoses that are used in analyses.

SCID-Derived Measures

Specific diagnoses from the SCID were grouped for data analysis into larger categories including Mood Disorders, Disruptive Behavior Disorders and Substance Use Disorders.

Life Pathways of Psychopathology:

Building on the work of Compas and colleagues (1995), we classified all participants into four, admittedly coarse, childhood-to-young-adult psychopathology pathways for each of these three larger categories of disorders.

A simple 2 by 2 matrix forms these pathways: [Figure 6 about here].

- *Continuous adaptive functioning*: in which there was no psychopathology in childhood or adulthood. You will also see this referred to as the no disorder category on several Figures.
- *Adult recovery*: psychopathology in childhood but **not** in adulthood
- *Adult onset*: **no** psychopathology in childhood; but there was psychopathology in adulthood
- *Persistent psychopathology*: episodes of psychopathology in **both** childhood and adulthood

These four pathways were designed to capture the trajectory that participants were on as they arrived for their age 32 assessment of functioning. It should be noted that for the Disruptive Behavior Disorder pathways, the Adult Onset category is not applicable. This is because Antisocial Personality Disorder was the only adult indicator of disruptive behavior problems. The DSM requires evidence of the presence of Conduct Disorder prior to age 15 in order to receive a later diagnosis of Antisocial Personality Disorder. This requirement effectively precludes the adult onset of Disruptive Behavior Disorders.

Results

Turning to the results, I am first going to present data that I think speaks to the sensitivity, validity, and accuracy of the SCID-derived psychopathology data.

Based on the SCID interviews, 1-year prevalence rates at age 32 were calculated for participants in both the high school and clinic samples. One-quarter of the high school sample and 42% of the clinic sample had some type of psychopathology in the past year when they were interviewed at age 32. The rates for the high school sample are comparable to those obtained in early adulthood in large scale epidemiological studies of community samples using sensitive measures of psychopathology. The

similarity in prevalence across our study and others, and the differential rates of the clinic and high school samples in our study provide support for the sensitivity and validity of the SCID-derived diagnoses in this study.

Figure 7 presents the frequencies of the psychopathology pathways for Mood and Disruptive Behavior syndromes for the high school and clinic sample. Lifetime prevalence rates can also be considered in this context -- in the interests of time I am reviewing only the Mood and Disruptive Behavior Disorder pathways. First you will notice, that the clinic sample – the white bars– constituted the vast majority of the persistently disordered participants (the last set of bars on the graphs for both types of psychopathology). Reflecting their early history of serious psychopathology, the clinic sample displayed high lifetime prevalence rates of Mood and Disruptive Behavior Disorders. Likewise, the High School sample had the majority of the participants who had no disorders in these categories. While the lifetime rates of psychopathology were significantly lower for the high school sample, it is clear that the SCID is very sensitive to manifestations of psychopathology across the life-span. Close to 2/5 of the participants in the high school sample experienced a Mood Disorder at some point in their lifetime while about 12 percent met the criteria for a Disruptive Behavior Disorder during their childhood.

Accuracy of Retrospective Diagnoses

To examine the accuracy of the retrospective diagnoses obtained by the SCID we compared them to our prospectively collected YSR and SCL-90 symptom information. First, using the 3 categories of diagnoses, those participants with a SCID-derived diagnosis at ages 16 or 17 were compared to those without SCID-derived diagnoses on the Internalizing and Externalizing Dimensions of the Youth Self Report (YSR).

Figure 8 presents these YSR comparisons for those with and without SCID diagnosed Mood and Disruptive Disorders during adolescence. On the left graph are comparisons of the YSR internalizing, the first pair of bars, and externalizing scales, the second set of bars, for those with and without a Mood Disorder. The dark bars are for those who had a SCID-based Mood Disorder diagnosis at age 16 or 17. On the right are YSR comparisons for those with and without SCID-derived Disruptive Disorders at age

16 or 17. Analyses revealed expected differences on the YSR dimensions between those with and without SCID identified disorders. Most impressively, the pattern of differences provided evidence of specificity in matching retrospective diagnoses to particular domains of psychopathology. In comparison to those without a SCID Mood Disorder diagnosis, those diagnosed by the SCID with a Mood Disorder reported higher scores on the internalizing dimension but not on the externalizing dimension of the YSR. Similarly, those participants diagnosed by the SCID with a Disruptive Disorder reported more externalizing symptomatology than non-diagnosed participants at age 17 but displayed no differences in internalizing symptomatology. The pattern for those diagnosed with Substance Use Disorders was the same as that of those diagnosed with Disruptive Behavior Disorders. Exactly the same patterns were observed for the SCL-90 depression and hostility scale comparisons at age 25. To summarize these analyses, the prevalence rates and the degree of concordance between the prospective symptom data and the retrospective SCID diagnoses provide evidence for the validity and accuracy of our retrospectively derived diagnoses.

Predicting Early Adult Functioning with Psychopathology Life Course Data

Having addressed our first goal, we turned to investigate more closely our second goal of meaningfully capturing trajectories of pathology over time. Specifically, we examined the contribution of the psychopathology pathways to predictions of functioning at age 32. Separate hierarchical multiple regression models were analyzed for predicting early adult functioning using overall self esteem and overall social functioning as assessed by interviewers using the SAS. The order of entry of predictor variables was based on temporal ordering and theoretical considerations. Before examining the influence of the diagnostic pathways drawn from the SCID, we entered two important control variables -- initial clinical vs. high school status and a rating of the severity of participants' worst mood disorder. Preliminary correlational analyses had revealed that both these variables were related to the outcomes and the pathways. The pathways were identified by a block of dummy variables. First the mood, then disruptive and then substance use pathways were stepped into the model. Finally, we entered information

about the presence or absence of **current** -- that is age 32 -- disorder in each of the three categories of psychopathology.

Self Esteem: Regression analyses indicated that the combination of lifetime psychopathology information explained close to 46% of the variance in global self-esteem at age 32, that is almost half. Over and above the influence of hospitalization in adolescence and the severity of the worst mood disorder, the mood pathways as a block predicted an additional 12 percent of the variance in self esteem. That is, knowing something about the occurrence and timing of mood disorders across childhood and early adulthood helps explain a sizeable chunk of the variance in current overall self-worth. I will say more about the nature of these links in a moment. The disruptive behavior pathways predicted an additional 7.7 percent of variance in self-esteem. The substance use pathways did not explain additional variance beyond this, but the block of variables capturing presence or absence of current psychopathology in the mood, disruptive and substance use domains explained an additional 12.9 percent of the variation in current self-esteem. This suggests that the trajectory of pathology that these individuals were on is only part of the story – current pathology is highly important.

Social Functioning: The full model for social functioning accounted for 42% of the variation in overall social adjustment as rated by interviewers using the Social Adjustment Scale (SAS). After accounting for the influence of initial clinical vs. high school status and severity of past Mood Disorder, pathways of Mood Disorder explained an additional 6.7 percent of the variance. None of the other lifetime psychopathology data from the SCID explained a significant amount of additional variance over and above the contribution of original clinical status and the mood pathways. Presence or absence of *current* psychopathology did explain an additional 9.3 percent of the variation in overall social adjustment. [Figure 9 about here].

Clarifying links between psychopathology pathways and current functioning

Having established the predictive power of the pathways, we conducted a final exploratory set of analyses to try to clarify the nature of the links between mood disorder pathways and current functioning. Using General Linear Modeling analyses, with clinic vs. high school status entered as a covariate, we

examined differences in functioning across the mood pathway groups. The overall effect for pathway in the self-esteem model was significant while in the SAS overall functioning model it was marginally significant. The estimated means derived from these analyses are summarized in Figures 10 & 11.

Paired comparisons indicated that individuals who had Mood Disorders across childhood and adulthood – the persistent group -- and those who had adult onsets of Mood Disorder reported lower self-esteem in adulthood than those who experienced mood disruptions in childhood but not adulthood – the adult recovery group. Given that deficits in self-esteem are considered a part of the definitional criteria for depression, this result is not surprising. The experience of mood disorder in adulthood is associated with lower self-esteem.

More interestingly, the adult recovery group reported higher levels of self-esteem in adulthood than those who never had a Mood Disorder, although this difference was only marginally significant. This trend does suggest, however, that there might be some potential resilience process associated with having experienced an early mood disorder and overcome what, for some people, can become a persistent pattern.

The analysis of paired comparisons for SAS-rated overall adjustment yielded similar findings. Remember that high scores on the SAS represent poorer functioning. In this case, the continuous adaptive, no disorder, group and the adult recovery group were judged to have very similar levels of functioning. An additional intriguing trend in the data is a difference in functioning at age 32 between the persistently disordered and those with adult onset of Mood Disorder. This trend suggests that the early and persistent experience of mood disorders over the lifetime has an accumulated negative impact on social functioning that exceeds the shorter term effects of mood disorders experienced solely in adulthood. This type of finding provides additional support for the value of considering prior psychopathology history when examining the impact of recent episodes on functioning.

Limitations

Several limitations in our study should be noted. The two samples we examined are relatively small and have relatively homogeneous social and ethnic backgrounds. These sample features may

restrict the generalizability of the findings. It is also critical to keep in mind that the pathways were constructed with retrospective reports obtained at the same time as the data on functioning. This proximity in time may inflate the degree of association that might really exist between lifetime psychopathology information and current functioning.

Summary, Future Directions and Conclusion

To summarize, this study was motivated by a desire to create a more dynamic and individual-centered perspective on psychopathology by examining patterns of pathology over time. We had two primary goals. The first was to examine the accuracy of retrospectively reported diagnostic information. The second was to identify ways to use this lifetime diagnostic information to categorize individuals into meaningful pathways of psychopathology over time. We were particularly interested in the predictive utility of these pathways for early adult functioning.

Our analyses suggest that a careful, structured diagnostic interview can obtain accurate retrospective diagnostic information. Our study was able to establish persuasive concordance between prospectively collected symptom data and the retrospective diagnoses made by the SCID.

Our relatively coarse qualitative approach to constructing pathways of psychopathology over time also shows promise. The SCID-derived pathway variables displayed strong predictive power in explaining self esteem in early adulthood and also some predictive power in explaining current functioning in early adulthood. Meaningful differences were found in adaptation as a function of these pathways.

Based on these promising preliminary analyses, we are currently pursuing four directions of research with these data. The first involves using the pathways we have identified as outcomes to be predicted from adolescent era information we have on participants from 15-20 years ago. The second involves using the pathways as predictors of later psychopathology. We are continuing to follow these individuals into their later 30s. The third involves refining our broad psychopathology pathways, exploring ways to address more specific questions about the life course of specific kinds of pathology and

the sequelae of these trajectories at different ages. Finally, we are considering strategies to quantify the SCID psychopathology information in a way that will enable us to employ more quantitative approaches to growth over time, such as hierarchical linear modeling.

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Figure 1

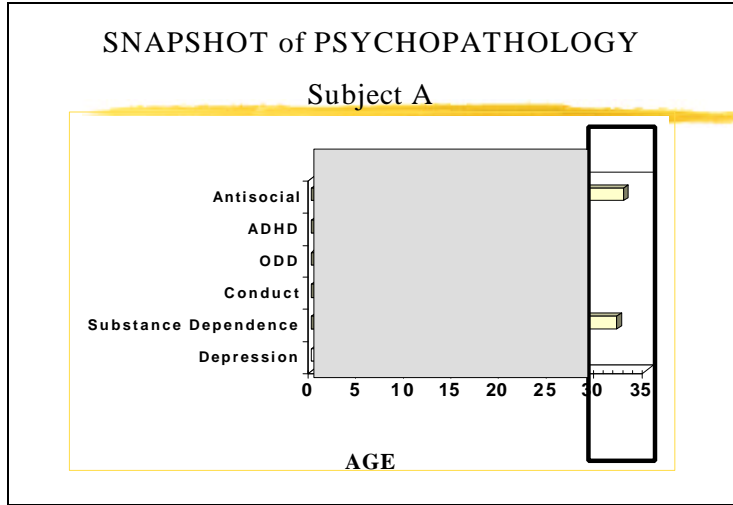


Figure 2

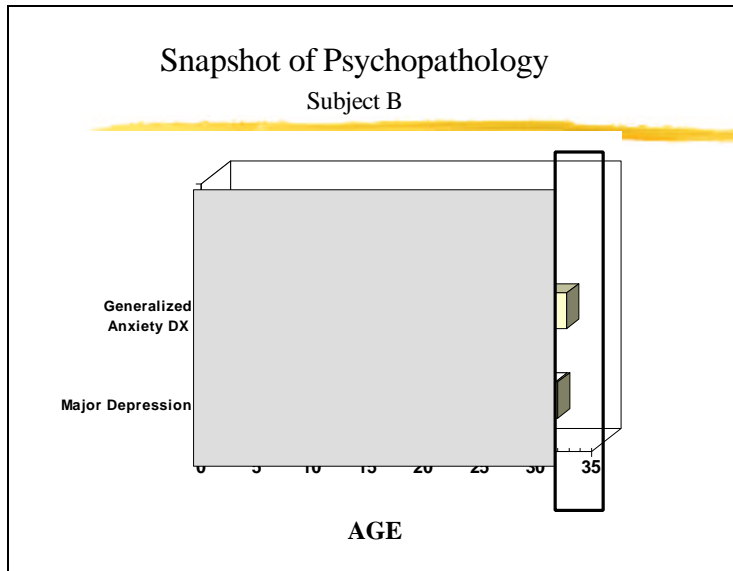


Figure 3

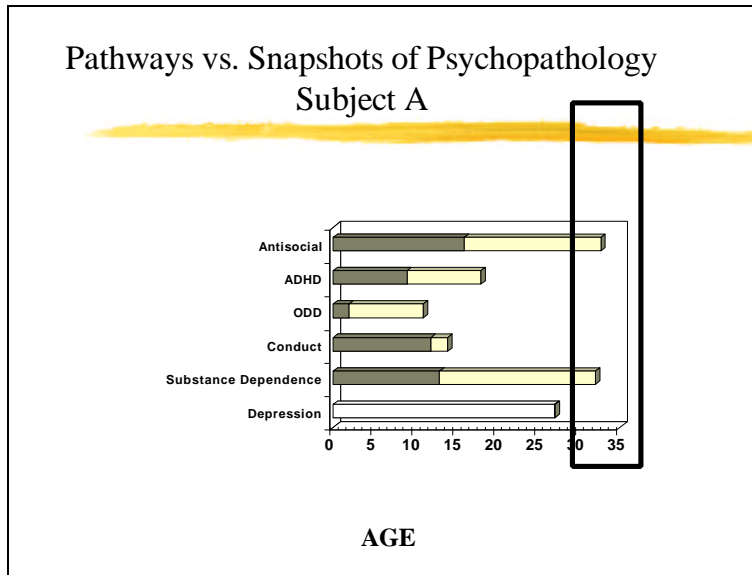


Figure 4

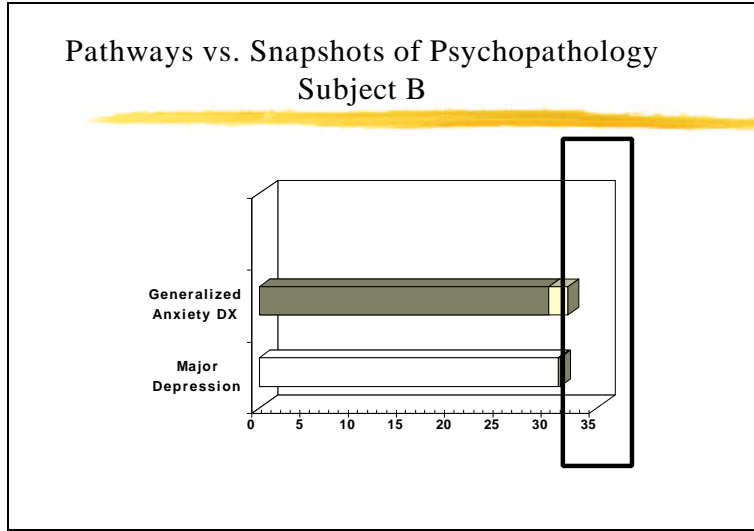


Figure 5

Assessments and Measures

- **Age 17** - Youth Self Report (YSR)
 - internalizing and externalizing
- **Age 25** - Symptom Checklist (SCL-90)
 - depression and hostility
- **Age 32**
 - **SCID Diagnostic Interview**
 - **Current Functioning**
 - Harter Self-Esteem
 - Social Adjustment Scale -- Overall Functioning

Figure 6

Pathways of Psychopathology

Derived from SCID Diagnoses

| | Disorder in Childhood? | |
|--------------------------|------------------------|----------------------|
| | NO | YES |
| No Adult Disorder | Continuous Adaptive | Adult Recovery |
| Adult Disorder | Adult Onset | Persistent Pathology |

Figure 7

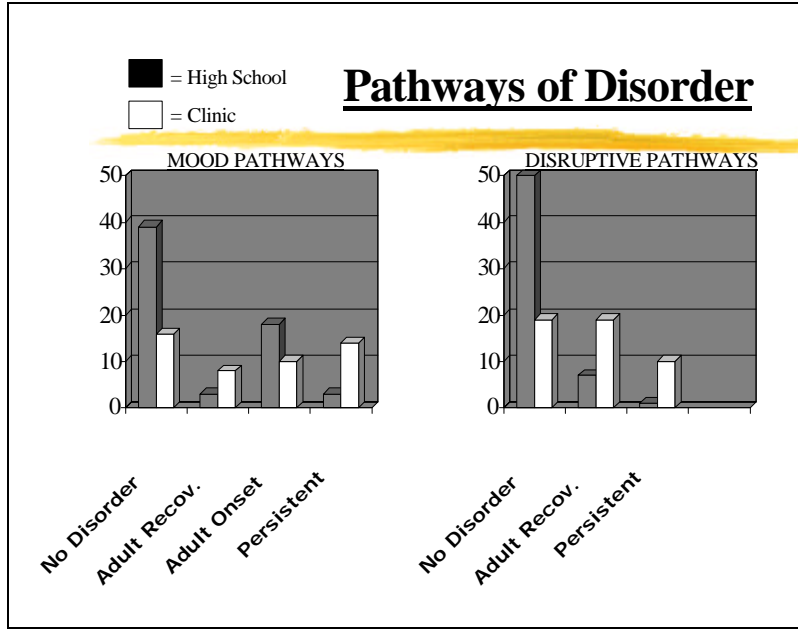


Figure 8

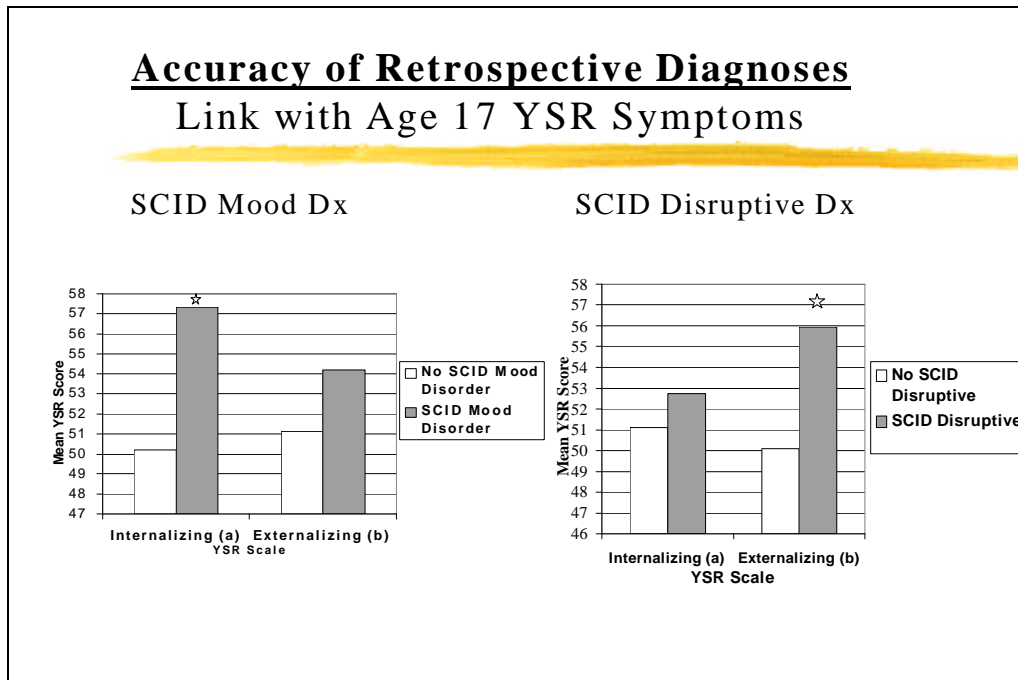


Figure 9

Hierarchical Multiple Regression Analysis Predicting Current Functioning

| STEP (Predictors) | Harter Global Self Esteem | | SAS Global Adjustment | |
|------------------------|---------------------------|-----------------|-----------------------|-----------------|
| | R Square | R Square Change | R Square | R Square Change |
| 1. Clinical Status | .119 | .119** | .229 | .229** |
| 2. Mood Severity | .122 | .003 | .230 | .001 |
| 3. Mood Pathways | .241 | .119** | .296 | .067* |
| 4. Disruptive Pathways | .318 | .077** | .318 | .022 |
| 5. Substance Pathways | .328 | .010 | .326 | .008 |
| 6. Current Disorders | .457 | .129** | .419 | .093** |

*p<.05, **p<.01

Figure 10

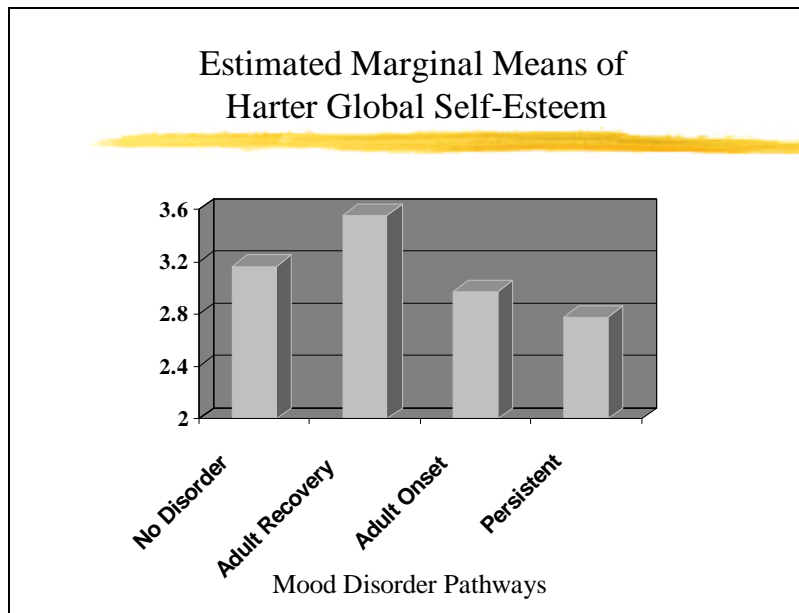


Figure 11

