

# Change in Prevalence of Psychiatric Disorders From Ages 21 to 30 in a Community Sample

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**Abstract:** The authors examined change and demonstrated variation in the prevalence of psychiatric disorders from ages 21 to 30 in a prospective community study ( $n = 352$ ) using generalized estimating equations and investigated effects of past and recent psychiatric disorder on emerging adult functioning (at age 30). Results revealed significant declines in 12-month prevalence of phobia and substance use disorders from ages 21 to 30 but not in depression or posttraumatic stress disorder. Males were at significantly higher risk for lifetime substance use disorders; females were at higher risk for lifetime depression, phobia, and PTSD. Twelve-month and lifetime disorder were associated with impaired global functioning at age 30. Internalizing disorders were associated with impaired interpersonal functioning, whereas externalizing disorders were associated with impaired socioeconomic functioning. Results of this study have implications for mental health service planning in emerging adulthood.

**Key Words:** Depression, substance use disorder, phobia, PTSD, emerging adult.

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Psychiatric disorder undermines key domains of adjustment, including educational attainment (Kessler et al., 1995), occupational productivity (Wittchen et al., 1998), and marital stability (Kessler et al., 1998). Despite these associations, there remains a clear need for information accurately describing prevalence of psychiatric problems during emerging adulthood (ages 18–30; Arnett, 2000; Institute of Medicine, 1994), the period of the life span when careers and

families are first established. No studies to date, using clinically relevant measures and longitudinal design, have provided information on prevalence of psychiatric disorder across this important age period. This current study estimates and documents change in 12-month and lifetime prevalence of 5 psychiatric disorders at ages 21, 26, and 30 and investigates differences in emerging adult functioning (at age 30) as a function of psychiatric history.

Without comprehensive knowledge of the specific psychiatric disorders most prevalent during this age period, mental health service needs of emerging adults may be underestimated and misunderstood. Understanding emerging adult mental health needs, however, requires a developmental approach considering episodes of psychiatric disorder both during emerging adulthood and in earlier years. By age 24, 75% of those who will ever meet criteria for psychiatric disorder will have experienced onset (Kessler et al., 2005a). However, despite efforts to prevent and treat early onset mental health problems, disorders of childhood and adolescence often go untreated (Essau, 2005; Kataoka et al., 2002). Those youth who experience early onset psychiatric problems, considered a risk factor for recurrent, comorbid, and increasingly severe episodes (Alpert et al., 1999; Last et al., 1997), remain in need of mental health services as they enter into adulthood. In sum, mental health needs of emerging adults are an amalgam of both current and past disorder.

Data collected over a decade ago from 2 large-scale, cross-sectional, epidemiological surveys, the Epidemiologic Catchment Area Program (ECA; Robins and Regier, 1991) and the National Comorbidity Survey (NCS; Kessler et al., 1994), and a recent replication of the National Comorbidity Survey (NCS-R; Kessler and Merikangas, 2004) supply epidemiological data on the prevalence of adult psychiatric disorder. The 12-month prevalence of psychiatric disorder in 18–29-year-olds was 25% in the ECA study, higher than rates reported for any other age group (Robins and Regier, 1991), and 37% for 15–24-year-olds in the NCS (Kessler et al., 1994). NCS-R findings reveal a lifetime prevalence of 52.4% for psychiatric disorder among 18–29-year-olds (Kessler et al., 2005a). These snapshots of population prevalence, however, may underestimate rates of disorder (Costello et al., 2003) in emerging adulthood for several reasons.

Findings from the ECA and NCS studies estimate population prevalence using structured psychiatric interviews, relying on retrospective recall of adults covering a

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wide age range. Because older adults have a tendency to bias recall of symptoms toward later age of onset (Prusoff et al., 1988) this may lead to an underestimation of prevalence in early adulthood (Costello et al., 2006; Kraemer, 1995; Masia et al., 2003; Pearson et al., 1992). The current prospective study uses multiple assessments of psychiatric disorder, collected at short intervals (3–5 years) during the age period of interest to reduce recall bias (Wells and Horwood, 2004). We anticipate that this method will result in higher prevalence estimates than those relying on recall of older adults.

A second methodological issue impeding understanding of psychiatric disorder during emerging adulthood is that large-scale population studies combine reports for several distinct developmental age groups (i.e., adolescents and emerging adults). Many important developmental features distinguish adolescence from emerging adulthood (Arnett and Tanner, 2006), including differences in brain development associated with risk for psychiatric disorder (Keshavan and Hogarty, 1999; McGlashan and Hoffman, 2000). Grouping distinct developmental age groups conceals variation in prevalence. For example, Newman et al. (1996), in a community sample, were able to report increases in disorder from late childhood (18%) through midadolescence (22%) to late adolescence (41%) and emerging adulthood (40%), which would have been masked by a combined prevalence report for adolescents and emerging adults. Investigating change in prevalence at distinct ages has the advantage of providing information about psychiatric disorders that may impact and be impacted by different developmental tasks (e.g., educational attainment early in emerging adulthood; establishing partnerships and families in later emerging adulthood).

Mental health services are most effective when they treat specific rather than global psychiatric problems. Therefore, the needs of emerging adults for mental health care require knowledge of the most prevalent disorders across the age period. Regarding lifetime prevalence of adult disorders among those aged 18–29, rates are highest for anxiety disorders (30.2%), followed by mood disorders (21.4%), and substance use disorders (16.7%) (Kessler et al., 2005a). We know little, however, about whether this rank order of disorders holds true across emerging adulthood, for example, do anxiety disorders maintain the highest rank in 12-month and lifetime disorder from early to later emerging adulthood? Given that median ages of onset vary by disorder (Kessler et al., 2005a), we expect that prevalence of specific disorders will vary across this age period as well. Age-of-onset distributions provide specific ages by which a certain percentage of those who will ever meet criteria for a disorder will experience onset. Recent data indicate variation by disorder in regard to ages by which 50% and 75% of individuals will experience onset ranging from childhood and adolescence for phobia, emerging adulthood for alcohol use and drug use disorders, and into the 30s and 40s for PTSD and major depression (Kessler et al., 2005a). On the basis of age-of-onset distributions, we expect to find decreasing prevalence of alcohol use disorders, drug use disorders, phobia; and, in

contrast, we expect to find increasing prevalence of major depression and PTSD.

Many studies have documented sex differences in prevalence of psychiatric disorders. These differences, characterized by higher rates of internalizing disorders in females (e.g., mood and anxiety) and higher rates of externalizing disorders in males (e.g., substance use disorders), begin in childhood, continue through adolescence (Costello et al., 2003; Giaconia et al., 1994; Hankin et al., 1998; Reinherz et al., 1993), and are reflected in significant sex differences in adult samples (Kessler et al., 2005b). Findings from the NCS-R study indicated that for adults, being young and male were risk factors for having a lifetime history of an externalizing disorder, only, and also for having comorbid internalizing or externalizing disorder (Kessler et al., 2005b). Neither higher rates of pure internalizing disorders nor comorbid internalizing/externalizing disorder, however, were associated with being female. These associations suggest that the same pattern of sex differences found in younger and older age groups may not hold true for emerging adults. This pattern informs our hypothesis that, unlike during adolescence or later adulthood, males will be at higher risk for externalizing disorders, but that females will not be at higher risk for internalizing disorders during emerging adulthood.

If prevalence decreases across the emerging adult years, it may be assumed that associated functional impairments decrease as well. Although several studies have established a link between psychiatric disorder and impaired functioning in late adolescence and emerging adulthood (Fergusson and Woodward, 2002; Heiligenstein et al., 1996; Reinherz et al., 1993, 1999), few have tested whether both current and past disorder undermine functioning during emerging adulthood (see for exception Paradis et al., 2006). Because of high rates of onset of psychiatric disorder before emerging adulthood, investigations of associations between psychiatric disorder and functioning during emerging adulthood require consideration of both current and past episodes of disorder. Although we hypothesize that 12-month prevalence will decline for several psychiatric disorders, which might suggest that psychiatric disorder becomes less of a threat to emerging adult functioning, we expect that psychiatric disorder will have lingering effects. That is, we hypothesize that those emerging adults who ever experienced an episode, both past and recent, of a disorder will experience lower functioning compared with those who never experienced an episode.

This article provides findings from a longitudinal study that highlight variation in prevalence of psychiatric disorder from ages 21 to 30. The 3 goals of this study are to: (1) determine change in the lifetime and 12-month prevalence of 5 psychiatric disorders (i.e., major depression, phobia (social and specific), PTSD, and alcohol and drug use disorders) from age 21 to 30, (2) examine whether sex differences in prevalence of internalizing and externalizing disorders are observed across emerging adulthood, and (3) test for differences in age 30 functioning between 3 groups: emerging adults with recent psychiatric disorder, those with lifetime but

no recent disorder, and those with no history of psychiatric disorder.

## METHOD

### Study Population

Data for this study were drawn from the Simmons Longitudinal Study, a 28-year, 8-wave, prospective, longitudinal study that began in 1977. The original study sample included all children entering kindergarten within a single public school system in New England participating in state-mandated preschool testing of developmental, academic, and behavioral factors ( $N = 767$ ). The original sample reflected the community composition at that time; two-thirds of the households were working- or lower-middle class, and nearly all participants were Caucasian (99.3%). At the first assessment, 7.5% of mothers (mean age = 32.08) and 13.2% of fathers (mean age = 34.64) had completed a 4-year college degree. Because principal data collection occurred within the public schools, attrition was primarily due to out-migration from the school system. Original study participants who were lost between waves 1 and 8 did not differ significantly from those retained on key demographic, behavioral, developmental, or health factors originally characterizing the cohort, including gender ( $\chi^2 = 0.16, p = 0.70$ ), parent-reported SES ( $t = 0.70, p = 0.49$ ), parent-rated anxious-depressed behavior ( $t = -0.44, p = 0.66$ ), parent-rated attention problems ( $t = 1.71, p = 0.09$ ), and parent-rated physical health ( $t = -1.49, p = 0.14$ ). Attrition analyses suggest that the sample has retained representation across assessments.

### Study Subsample

For this current study all respondents who had complete psychiatric data at ages 21, 26, and 30 were included, yielding a study subsample of 352 respondents with equal numbers of males and females.  $\chi^2$  revealed no differences between the included and excluded groups on measures known to be associated with psychiatric problems.

At age 30, when functioning was measured, 32.1% of respondents had completed a 4-year college degree, 46% were married, and 34.9% had at least 1 child. The majority of the sample was employed (88.9%), 42.3% were homeowners, and the median salary for respondents was \$40,000–\$49,000 (US\$ 2001). Informed consent was obtained from all study participants. The Institutional Review Board of Simmons College approved consent and interview procedures.

## Measures

### Diagnostic Assessment

Prevalence of psychiatric disorder in this community sample was first assessed at age 18 (Reinherz et al., 1993). This current study represents the first report of sample prevalence at ages 21, 26, and 30. The Diagnostic Interview Schedule was used to assess psychiatric disorder at ages 21 (DIS-III-R; Robins et al., 1989), 26, and 30 (DIS-IV; Robins et al., 1995) based on DSM-III-R (American Psychiatric Association, 1987) and DSM-IV (American Psychiatric Association, 1994) criteria, respectively. Tests of validity have yielded significant agreement between DIS and psychiatrists'

assessments of disorder (North et al., 1997; Summerfeldt and Antony, 2002). During face-to-face interviews, diagnostic data for 5 disorders (i.e., major depression, phobia [social and specific], PTSD, alcohol use disorders [abuse and dependence], drug use disorders [abuse and dependence]) were collected at each wave by a team of interviewers trained by DIS-certified staff.

To test for group differences in age 30 functioning as a function of psychiatric history, respondents were categorized into 3 groups: "recent," "lifetime," and "no" disorder based on their psychiatric histories, combing data from all 3 assessments. Emerging adults in the recent disorder group met criteria for disorder in the past 12 months; emerging adults with lifetime disorder met criteria for disorder but not in the past 12 months (no recent episode); and those in the no disorder group did not meet criteria for any psychiatric disorder.

### Age 30 Functioning

#### Global Functioning

Global functioning was measured using the Global Assessment of Functioning Scale (American Psychiatric Association, 1994) to estimate emerging adults' overall level of functioning. A rating of 100 indicates superior functioning, ratings between 61 and 70 indicate mild symptoms, between 51 and 60 indicate moderate symptoms, and ratings of 50 and below indicate serious symptoms (e.g., delusional and self-injurious behaviors) (40–95;  $M = 79.97, SD = 9.39$ ).

#### Interpersonal Problems

Interpersonal problems were measured by asking respondents to report how often (in the past 6 months) they have been bothered by 9 interpersonal problems such as ". . . not having enough close friends" and ". . . not having people you can depend on" using a 5-point scale from "1" (never) to "5" (most of the time) (Reinherz et al., 1993). Higher scores reflect greater interpersonal problems ( $\alpha = 0.81; 8-38; M = 18.46, SD = 5.43$ ).

#### Socioeconomic Status

Socioeconomic status was used as an indicator of emerging adults' capital (i.e., financial and human), resources, and assets available to achieve and maintain self-sufficiency (Bradley and Corwyn, 2002). The Hollingshead 2-factor index (educational attainment and occupational prestige; Hollingshead and Redlich, 1957) of social position was calculated; higher scores indicate higher socioeconomic status (11–69;  $M = 39.08, SD = 14.47$ ).

### Analysis

First, 12-month and lifetime prevalence rates with 95% confidence intervals were calculated for the 5 assessed psychiatric disorders at ages 21, 26, and 30. Second, generalized estimating equations with repeated measures on psychiatric disorder using the logit link function (Diggle et al., 1993; Liang and Zeger, 1986; Zeger and Liang, 1986) in PROC GENMOD (SAS v 9.1; Fitzmaurice et al., 2004; SAS, 1999) were used to test for (1) significant time  $\times$  sex interactions, indicating variation between males and females with respect

to change in prevalence over time, and, in the absence of a significant interaction, (2) main effects for sex and time across the 3 ages. Third, 3 groups, representing emerging adults' histories of psychiatric disorder: (1) those with recent disorder (past 12 months), (2) those with lifetime but no recent disorder (past 12 months), and (3) those with no history of psychiatric disorder, were tested for differences on measures of emerging adult (age 30) functioning using analysis of variance (ANOVA).  $\eta$ -Squared was used to calculate effect size in the ANOVAs. Dunnett's C (unequal variance) and Tukey (equal variance) statistics determined significant post hoc group differences.

## RESULTS

### Twelve-Month Prevalence of Psychiatric Disorders From 21 to 30

Twelve-month prevalence of any psychiatric disorder declined from ages 21 (43%), to 26 (24%), to 30 (17%). An interaction effect revealed a significant difference in the pattern of change in prevalence between males (54%, 28%, 15%) and females (32%, 20%, 18%),  $\chi^2(2, N = 352) = 10.9, p = 0.004$ , indicative of a narrowing in the gender gap characterized by higher prevalence of psychiatric disorder among males at the beginning of the age period examined. Alcohol use disorders were the most prevalent, compared with the other 4 disorders, at ages 21 and 26 (Table 1). At age 30, major depression was most prevalent with alcohol use disorders ranking second in this community sample.

No significant time  $\times$  sex interactions were found for any of the 5 specific disorders, indicating the same pattern of change for males and females. Significant declines in 12-month prevalence were found for phobia, alcohol, and drug use disorder from ages 21 to 30 (Table 1). Significant sex effects, representing average prevalence across the 3 ages, revealed higher 12-month prevalence of depression,  $\chi^2(2,$

$N = 352) = 7.3, p = 0.01$ , and PTSD,  $\chi^2(2, N = 352) = 10.7, p = 0.001$ , (and a trend difference for phobia,  $\chi^2(2, N = 352) = 3.4, p = 0.07$ ) among females, and substance use disorders among males (alcohol:  $\chi^2(2, N = 352) = 50.1, p = 0.001$ ; drug:  $\chi^2(2, N = 352) = 9.1, p = 0.003$ ).

### Lifetime Prevalence of Psychiatric Disorders From 21 to 30

Lifetime prevalence for all disorders significantly increased from ages 21 to 30 (Table 1), indicating the presence of incident cases of specific disorders between ages. A lack of significant time  $\times$  sex interactions across all 5 specific disorders revealed that the pattern of change in lifetime prevalence from ages 21 to 30 did not vary by sex for any of the specific disorders. Alcohol use disorder demonstrated the highest lifetime prevalence at each of the 3 ages, whereas lifetime prevalence of major depression increased the most over this same period, from 8.8% to 31.0%,  $p < 0.001$ .

### Sex Differences in Lifetime Prevalence Through Age 30

Generalized estimating equation analyses revealed sex differences in lifetime prevalence reflecting the same pattern of sex differences found in 12-month prevalence for specific disorders across the 3 ages. Significant sex effects, testing averages of prevalence across the 3 ages, indicated that lifetime prevalence of alcohol use disorders ( $\chi^2[2, N = 352] = 55.3, p < 0.001$ ) and drug use disorders ( $\chi^2[2, N = 352] = 9.2, p = 0.003$ ) was higher in males whereas lifetime prevalence of major depression ( $\chi^2[2, N = 352] = 5.8, p = 0.02$ ) and PTSD ( $\chi^2[2, N = 352] = 7.5, p = 0.01$ )—and a trend difference for phobia ( $\chi^2[2, N = 352] = 3.5, p = 0.06$ )—was higher in females.

ANOVA tests for sex differences in lifetime prevalence at specific ages revealed that being male was a significant risk factor for alcohol use disorder at each of the 3 ages (Table 2)

**TABLE 1.** Twelve-Month and Lifetime Prevalence of Specific Psychiatric Disorders in a Community Sample of Emerging Adults

	Age 21		Age 26		Age 30		Time Effect	
	<i>n</i>	% (95% CI)	<i>n</i>	% (95% CI)	<i>n</i>	% (95% CI)	$\chi^2$	<i>p</i>
12-month								
Major depression	19	5.4 (3.0–7.8)	24	6.8 (4.2–9.4)	28	8.0 (5.2–10.8)	1.9	0.38
Phobia	59	16.8 (12.9–20.7)	16	4.5 (2.3–6.7)	8*	2.3 (1.0–3.9)	54.9	0.001
PTSD	12	3.4 (1.5–5.3)	9	2.6 (0.9–4.3)	6*	1.7 (0.3–3.1)	2.5	0.28
Alcohol abuse/dependence	94	26.7 (22.1–31.3)	38	10.8 (7.6–14.0)	21	6.0 (3.5–8.5)	78.2	0.001
Drug abuse/dependence	23*	6.6 (4.0–9.2)	16	4.5 (2.3–6.7)	12	3.4(1.5–5.3)	5.8	0.055
Lifetime								
Major depression	31	8.8 (5.8–11.8)	87	24.7 (20.2–29.2)	109	31.0 (26.2–35.8)	86.8	0.001
Phobia	79	22.4 (18.0–26.8)	90	25.6 (21.0–30.2)	94*	26.9 (22.3–31.5)	16.6	0.001
PTSD	20	5.7 (3.3–8.1)	36	10.2 (7.0–13.4)	42*	12.0 (8.6–15.4)	23.6	0.001
Alcohol abuse/dependence	94	26.7 (22.1–31.3)	38	10.8 (7.6–14.0)	21	6.0 (3.5–8.5)	78.2	0.001
Drug abuse/dependence	39*	11.1 (7.8–14.4)	65*	18.6 (14.5–22.7)	71*	20.3 (16.1–24.5)	33.6	0.001

\*Diagnosis is missing from 2 respondents,  $N = 350$ .

**TABLE 2.** Lifetime Prevalence of Psychiatric Disorders in a Community Sample of Emerging Adults by Sex

Disorder	Males			Females			Odds Ratio	95% CI	
	<i>n</i>	%	95% CI	<i>n</i>	%	95% CI			
Age 21									
Major depression	12	6.8	4.2–9.4	19	10.8	7.6–14.0	1.65	F:M	0.7–3.5
Phobia	35	19.9	15.7–24.1	44	25.0	20.5–29.5	1.34	F:M	0.8–2.2
PTSD <sup>‡</sup>	4	2.3	1.0–3.9	16	9.1	6.1–12.1	4.30	F:M	1.4–13.1
Alcohol abuse/dependence <sup>§</sup>	89	50.6	45.4–55.8	34	19.3	15.2–23.4	4.27	M:F	2.7–6.9
Drug abuse/dependence*	24	13.8	10.2–17.4	15	8.5	5.6–11.4	1.72	M:F	0.9–3.4
Age 26									
Major depression	37	21.0	16.8–25.3	50	28.4	23.7–33.1	1.49	F:M	0.9–2.4
Phobia	38	21.6	17.3–25.9	52	29.5	24.7–34.3	1.52	F:M	0.9–2.5
PTSD <sup>†</sup>	11	6.3	3.3–8.8	25	14.2	10.6–17.8	2.48	F:M	1.2–5.2
Alcohol abuse/dependence <sup>§</sup>	122	69.3	64.5–74.1	49	27.8	23.1–32.5	5.86	M:F	3.7–9.3
Drug abuse/dependence**	43	24.7	20.2–29.2	22	12.5	9.0–16.0	2.30	M:F	1.3–4.0
Age 30									
Major depression <sup>‡</sup>	43	24.4	19.9–28.9	66	37.5	32.4–42.6	1.86	F:M	1.2–2.9
Phobia* <sup>†</sup>	38	21.7	17.4–26.0	56	32.0	27.1–36.9	1.70	F:M	1.1–2.7
PTSD** <sup>‡</sup>	13	7.4	4.7–10.1	29	16.7	12.8–20.6	2.51	F:M	1.3–5.0
Alcohol abuse/dependence <sup>§</sup>	126	71.6	67.7–76.3	55	31.3	26.4–36.2	5.86	M:F	3.7–9.3
Drug abuse/dependence** <sup>‡</sup>	47	27.0	22.3–31.7	24	13.6	10.0–17.2	2.34	M:F	1.4–4.0

\*Diagnosis is missing from 2 respondents, *N* = 350.†*p* < .05; ‡*p* < .01; §*p* < .001.

and for lifetime drug use disorder at ages 26 and 30. Being female was a significant risk factor for PTSD at each of the 3 ages, but sex differences in lifetime prevalence of major depression and phobia were found only at age 30 when lifetime prevalence of both disorders was almost 2 times greater in females than males.

## Psychiatric Disorder and Age 30 Functioning

### Global Functioning

Assessments of global functioning, made by interviewers blind to emerging adults' histories of disorder, differed significantly between groups across all 5 disorders (Table 3). At age 30, emerging adults with no history of disorder were functioning higher than those with histories of disorder. Post hoc tests revealed differences in impaired functioning between the recent and lifetime groups. Impaired functioning was associated with recent disorder for all 5 disorders and residual impairment associated with lifetime disorder was revealed for major depression, PTSD, and drug use disorder.

### Interpersonal Functioning

No differences in self-reported age 30 interpersonal problems were found between groups with and without histories of phobia, alcohol use, or drug use disorder. However, emerging adults did vary in levels of self-reported interpersonal problems as a function of their histories of PTSD and depression (Table 3). Post hoc tests revealed that history of major depression was associated with impaired interpersonal

functioning at age 30; no additional residual effects of disorder on interpersonal functioning were found.

### Socioeconomic Status

Significant group differences indicated that age 30 socioeconomic attainment was lower in emerging adults with histories of PTSD, alcohol use disorder, and drug use disorder; however, there were no group differences in those with histories of phobia or depression (Table 3). Post hoc comparisons revealed no associations between recent disorder and age 30 SES.

## DISCUSSION

Psychiatric disorders, "the chronic diseases of youth" (Insel and Fenton, 2005), remain a threat in emerging adulthood. Findings from this study revealed a decrease in 12-month prevalence across this age period for several disorders commonly associated with the early adult years (e.g., alcohol use and drug use disorders); however, lifetime prevalence increased for all disorders examined and history of psychopathology continued to be associated with impairments. Given that emerging adults are the least likely adult population to have health insurance (Wu and Schlenger, 2004), have the lowest rates of health-care coverage (DeNavas-Walt et al., 2005), and are the least likely to receive mental health care (Wang et al., 2005), study findings reinforce the need for targeted programs and policies aimed at addressing the mental health needs of emerging adults.

**TABLE 3.** Age 30 Functioning × Group (Recent, Lifetime, No Disorder)

Disorder	Recent (R)		Lifetime (L)		No DX (N)		<i>F</i>	<i>p</i>	$\eta^2$	Significant Post Hoc Comparisons*
	<i>n</i>	Mean ( <i>SD</i> )	<i>n</i>	Mean ( <i>SD</i> )	<i>n</i>	Mean ( <i>SD</i> )				
Global functioning										
Major depression	28	68.9 (10.2)	81	76.9 (10.7)	243	82.3 (7.5)	37.61	0.001	0.18	N > L, R; L > R
Phobia <sup>†</sup>	8	64.9 (13.0)	86	78.9 (10.5)	256	80.9 (8.4)	12.99	0.001	0.07	N, L > R
PTSD <sup>†</sup>	6	63.7 (13.9)	36	73.8 (11.2)	308	81.1 (8.4)	21.48	0.001	0.11	N > L
Alcohol abuse/dependence	21	70.38 (9.7)	160	80.0 (9.3)	171	81.1 (8.7)	13.07	0.001	0.06	N, L > R
Drug abuse/dependence <sup>†</sup>	11	65.2 (9.6)	60	76.8 (10.7)	279	81.3 (8.4)	22.22	0.001	0.11	N > L, R; L > R
Interpersonal Problems										
Major depression <sup>‡</sup>	28	22.9 (5.4)	81	19.9 (5.9)	242	17.8 (4.9)	14.85	0.001	0.08	N < L, R; L < R
Phobia <sup>§</sup>	8	20.0 (7.2)	86	19.1 (5.6)	255	18.5 (5.3)	0.58	0.56	0.00	
PTSD <sup>§</sup>	6	28.2 (5.8)	36	20.8 (5.5)	307	18.2 (5.1)	14.37	0.001	0.08	N, L < R
Alcohol abuse/dependence <sup>‡</sup>	21	19.8 (5.4)	159	18.9 (5.6)	171	18.3 (5.3)	0.96	0.39	0.01	
Drug abuse/dependence <sup>§</sup>	11	19.4 (5.0)	59	20.0 (5.7)	279	18.4 (5.3)	2.15	0.12	0.01	
Socioeconomic status										
Major depression	28	36.5 (17.3)	81	42.0 (13.5)	243	41.1 (14.4)	1.56	0.21	0.01	
Phobia <sup>†</sup>	8	34.6 (14.5)	86	41.9 (14.6)	256	40.9 (14.4)	0.95	0.39	0.01	
PTSD <sup>†</sup>	6	38.8 (12.4)	36	34.9 (14.8)	308	41.7 (14.3)	3.77	0.02	0.02	N > L
Alcohol abuse/dependence	21	38.3 (15.8)	160	38.4 (13.5)	171	43.7 (14.8)	6.09	0.003	0.03	N > L
Drug abuse/dependence <sup>†</sup>	11	35.6 (13.6)	60	35.7 (13.8)	279	42.3 (14.4)	6.06	0.003	0.03	N > L

\**p* < 0.05.<sup>†</sup>Diagnosis is missing from 2 respondents, *N* = 350.<sup>‡</sup>Diagnosis is missing from 1 respondent, *N* = 351.<sup>§</sup>Diagnosis is missing from 3 respondents, *N* = 349.

We found support for our hypothesis that 12-month prevalence would be higher in our sample compared with reported population prevalence in the NCS and NCS-R due to our longitudinal study design (i.e., limited recall bias, and reporting of prevalence at distinct, rather than combined, ages). We recognize that prevalences estimated in this community study are not generalizable to the US population of emerging adults. To determine how representative these findings may be, secondary data analysis of the National Comorbidity Study-Replication (Kessler and Merikangas, 2004) could provide a cross-sectional profile of lifetime and 12-month disorder in the population from ages 18 to 29. Cross-sectional findings do not, however, have the power to provide developmental information on change in prevalence or to reveal variation across the age period as we have been able to illustrate in this study. When we averaged 12-month prevalence of any disorder in this community sample across the 3 distinct ages (i.e., 21 [43%], 26 [24%], and 30 [17%]), the estimate, 28%, was comparable to 12-month prevalence estimated in the ECA, 25%, and NCS, 37%. However, the averaged rate conceals change in prevalence demonstrated with a more fine-grained analysis. Using a developmental lens to examine differences in prevalence across the age period, we found that substance use disorders were most prevalent during the early twenties, whereas depression was most prevalent during the end of emerging adulthood (age 30).

At age 21, more than 1 in 4 emerging adults met criteria for an alcohol use disorder in this community sample. Given the high rates of alcohol abuse and dependence reported at

age 21, and the well-established finding that subgroups of emerging adults “age out” of problem drinking (Casswell et al., 2002; Schulenberg et al., 1996), the decline in 12-month prevalence is not surprising, although we note a significant increase in lifetime prevalence across the age period. The high prevalence of alcohol abuse and dependence found in our sample may be due in part to the prevalence of alcohol use disorders in their families of origin. The lifetime prevalence of alcohol use disorders in the parents of our respondents, 33% (parent psychiatric disorder was assessed at respondent ages 21 and 26 by both respondents and parents using the Family History Assessment Module (Janca et al., 1992)), is double of that reported in the NCS-R for any substance use disorder in middle-aged adults, 15.3% (ages 45–59; Kessler et al., 2005a). Multiple studies have demonstrated significantly higher rates of alcohol abuse and dependence among emerging adult children of parents with alcohol use disorders (Chassin et al., 1999, 2004; Jacob and Windle, 2000). Also, given that DSM-III-R criteria (used to assess alcohol use disorder at age 21) are more sensitive to early onset cases of alcohol dependence and abuse than DSM-IV criteria (Grant, 1997), the high prevalence of alcohol use disorders in this community sample may not be generalizable to other populations. These findings do, however, draw attention to the possible environmental and diagnostic factors that may impact prevalence estimates.

This study is one of few that provides information on phobia during emerging adulthood. We report 12-month decreases and lifetime increases in phobia from 21 to 30.

Phobia was the only 1 of the 5 disorders studied for which impairments in functioning were associated with recent but not past disorder. Given the early onset of phobias (Kessler et al., 2005a), perhaps individuals age out of this disorder along with associated impairments in earlier developmental periods, leaving limited lingering effects. Alternatively, given the heterotypic continuity of anxiety disorders associated with later substance use disorders and depression in childhood and adolescence (Costello et al., 2003), perhaps individuals with early phobia “age into” other disorders prevalent during emerging adulthood. Application of developmental psychopathology and developmental epidemiology perspectives to longitudinal studies of psychiatric disorder from childhood through emerging adulthood will help us gain insight into the unfolding of developmental trajectories of anxiety disorders, such as phobias, into adulthood.

Despite our hypothesis that 12-month depression and PTSD would increase across emerging adulthood, no significant change for either disorder was found. The increase in lifetime prevalence of depression reflecting new cases of disorder, however, was greater for depression than for any other disorder. Lifetime prevalence of both depression and PTSD was higher in females across the age period. Looking at specific ages, female gender was a risk factor for PTSD at all 3 ages, but female gender was a risk factor for depression only at age 30. Consistent with recent findings noting gender convergence in depressive symptoms from ages 18 to 25 (Galambos et al., 2006), results from this study also indicate gender equality at ages 21 and 26 compared with previously reported higher rates of depression in study females at age 18 (Reinherz et al., 1993). One recent study investigating intra-individual change in depressive symptoms from 18 to 25 revealed a more accelerated decrease in females (Galambos et al., 2006) suggesting that the early 20s may mark a period of decreased risk for females, rather than an increased risk for males. Nolen-Hoeksema (2002) noted that the context of early emerging adulthood, including empowering educational opportunities for females, may be protective against depression for young women. Further elaboration of individual and environmental protective factors that may reduce risk for depression during the early 20s for females (e.g., social support; Kendler et al., 2005) will provide useful information for planning effective prevention programs for reducing onset and recurrence and may indicate a need for sex-specific interventions.

Previous research has demonstrated that emerging adults are particularly at risk for experiencing life-threatening trauma (Breslau et al., 1991; Helzer et al., 1987), providing a context for the finding that lifetime prevalence of PTSD increased across this age period, although 12-month prevalence decreased. Given that women have double the likelihood of developing PTSD in response to trauma than men (Breslau et al., 1998), this increased risk for PTSD in emerging adult women is not surprising. The finding that lifetime, but not recent, episodes of PTSD were associated with impaired global functioning and also lower SES in both men and women does indicate that traumatic events that occur before this age period have residual effects on emerging adult

adjustment. Therefore, assessment of past trauma may help to identify sources undermining emerging adult functioning.

Study findings suggest that different disorders may challenge optimal emerging adult functioning in different domains. Lower global functioning was associated with history of any of the 5 disorders studied. In contrast, exclusively, lower interpersonal functioning was associated with depression, whereas lower socioeconomic status was associated with both alcohol and drug use disorders. PTSD was associated with impairments in both domains. One explanation for this finding is that the early 20s differ from the late 20s with regard to developmental tasks (Roisman et al., 2004; Tanner, 2006); in turn, meeting the challenges of different developmental tasks is undermined by different disorders. For example, substance use disorders in the early 20s may pose a greater threat to educational attainment and the establishment of career pathways. In contrast, the interpersonal challenges of later emerging adulthood required for developing adult intimate relationships and forming families may be more affected by major depression.

A second interpretation of our finding that internalizing disorders were associated with interpersonal problems, whereas externalizing disorders were associated with socioeconomic outcomes is that such associations may be influenced by self-report bias. Interpersonal problems were self-reported and negative interpersonal schemata characterize individuals with depression more so than individuals with substance use disorders (Mezulis et al., 2004). In contrast, SES was objectively calculated, less subject to negative bias, perhaps explaining the lack of association between depression and lower SES. Despite the potential bias due to a negative framework associated with depression, it is noteworthy that global functioning (which takes into account interpersonal functioning), objectively assessed by interviewers, was lower in groups with both lifetime and recent depression.

In this study, we tested associations between psychiatric disorder and functional impairment, assuming directionality (e.g., psychiatric disorder → impaired functioning) based on timing of assessments available in this study. However, psychiatric disorder and functioning largely covary and the potential for functional impairments (e.g., school failure; Vander Stoep et al., 2003) to predate psychiatric disorder is noted. These findings reaffirm the need for longitudinal research to disentangle associations between psychiatric disorder and functional impairments from childhood through emerging adulthood.

Despite the contribution this study makes by providing developmental information on prevalence of disorders across emerging adulthood, several limitations restrict the generalizability of the findings. The sample represents an early 70s birth cohort drawn from a working-class community limited in ethnic diversity. It is our hope that this study invites future work that compares prevalence of psychiatric disorder in emerging adults of different ethnicities. Future population-based studies are important to examine how rates of disorder vary as a function of different socioeconomic conditions and by ethnicity. Moreover, we recognize that prevalences reported in this study may still underestimate disorder during

emerging adulthood because estimates did not include psychiatric disorders of childhood and adolescence (e.g., ADHD, conduct disorder) or adult disorders with low base rates in community samples (e.g., eating disorders, schizophrenia, generalized anxiety disorder, personality disorders). Had all disorders been assessed, prevalence of disorder during emerging adulthood may have been higher. We also acknowledge a possible cohort effect. Our sample has come of age during the 1990s, an historical period associated with higher rates of psychiatric disorder than those typifying older cohorts (Kessler et al., 2005a). Whether high lifetime prevalence in emerging adulthood described in this study is an artifact of birth cohort will require future studies with more recent cohorts and empirical studies of change in prevalence using the same diagnostic system.

Acknowledging potential limitations, the findings reported in this article fill a gap in our understanding of prevalence of psychiatric disorder across the emerging adult period. Emerging adults who have ever experienced a psychiatric disorder by age 30 were at risk for impairments in functioning. Because there is a natural interruption of contact with medical professionals during this age period when emerging adults are no longer seen by their family pediatrician and have yet to establish a relationship with a primary care physician (American Academy of Pediatrics, 1996; Blum et al., 1993), programs that increase awareness of mental health issues in this age group in the medical community offer an avenue to increase clinical service use. In sum, this work provides data that are useful for the design and implementation of targeted mental health services to reduce prevalence of psychiatric disorder and associated impairments during this critical developmental period.

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