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Prevalence and Clinical Significance of *DSM-5*–Attenuated Psychosis Syndrome in Adolescents and Young Adults in the General Population: The Bern Epidemiological At-Risk (BEAR) Study

Frauke Schultze-Lutter*[,1], Chantal Michel[1], Stephan Ruhrmann[2], and Benno G. Schimmelmann[1]

[1]University Hospital of Child and Adolescent Psychiatry and Psychotherapy, University of Bern, Bern, Switzerland; and [2]Department of Psychiatry and Psychotherapy, University of Cologne, Cologne, Germany

*To whom correspondence should be addressed; University Hospital of Child and Adolescent Psychiatry and Psychotherapy, University of Bern, Bolligenstr 111, 3000 Bern 60, Switzerland; tel: +41-31-932-8564, fax: +41-31-932-8569, e-mail: frauke.schultze-lutter@kjp.unibe.ch

Objective: **Section III of the *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition* (*DSM-5*) lists attenuated psychosis syndrome as a condition for further study. One important question is its prevalence and clinical significance in the general population.** ***Method:*** **Analyses involved 1229 participants (age 16–40 years) from the general population of Canton Bern, Switzerland, enrolled from June 2011 to July 2012. "Symptom," "onset/worsening," "frequency," and "distress/disability" criteria of attenuated psychosis syndrome were assessed using the structured interview for psychosis-risk syndromes. Furthermore, help-seeking, psychosocial functioning, and current nonpsychotic axis I disorders were surveyed. Well-trained psychologists performed assessments using the computer-assisted telephone interviewing technique.** ***Results:*** **The symptom criterion was met by 12.9% of participants, onset/worsening by 1.1%, frequency by 3.8%, and distress/disability by 7.0%. Symptom, frequency, and distress/disability were met by 3.2%. Excluding trait-like attenuated psychotic symptoms (APS) decreased the prevalence to 2.6%, while adding onset/worsening reduced it to 0.3%. APS were associated with functional impairments, current mental disorders, and help-seeking although they were not a reason for help-seeking. These associations were weaker for attenuated psychosis syndrome.** ***Conclusions:*** **At the population level, only 0.3% met current attenuated psychosis syndrome criteria. Particularly, the onset/worsening criterion, originally included to increase the likelihood of progression to psychosis, lowered its prevalence. Because progression is not required for a self-contained syndrome, a revision of the restrictive onset criterion is proposed to avoid the exclusion of 2.3% of persons who experience and are distressed by APS from mental health care. Secondary analyses suggest that a revised syndrome would also possess higher clinical significance than the current syndrome.**

Key words: attenuated psychosis syndrome/general population/prevalence/distress/disability/functional impairment

Introduction

Attenuated psychosis syndrome[1–4] was recently introduced in section III (ie, "Emerging Measures and Models") of the *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition* (*DSM-5*) as a self-contained, rather than risk, syndrome and identified as a condition for further study.[5,6] Modeled primarily on risk criteria from the structured interview for psychosis-risk syndromes (SIPS) related to attenuated psychotic *symptoms* (APS; abbreviation exclusively used for these),[1,2,7] its "symptom" criterion requires the presence of delusions, hallucinations, or disorganized speech in an attenuated form not better explained by another *DSM-5* diagnosis and which have never been severe enough to meet diagnostic criteria for a psychotic disorder.[8] Furthermore, the "frequency" criterion calls for at least weekly occurrence in the past month and the "onset/worsening" criterion for an onset or worsening of the APS within the past year. Moreover, to avoid diagnostic creep and related overdiagnosis,[8] a "distress/disability" criterion (ie, "symptom(s) is sufficiently distressing or disabling to the individual to warrant clinical attention."[6(p.783)]) was introduced.

Fear of diagnostic creep has been nourished by the high rates of psychotic-like experiences reported for the general population,[3,9] which has led some to question the psychopathological significance and clinical utility of APS.[3,4] Yet, psychotic-like experiences assessed by questionnaire show insufficient agreement with clinician-assessed APS ($\kappa = 0.022$),[10] suggesting that their prevalence is overestimated.[4,8,10–14] To date, little is known about

the population prevalence of APS as assessed by clinicians using the same instruments as for the early detection of psychosis.[4,10,15] Recently, 2 studies on adolescents (11–13 [N = 212][16] and 13–15 [N = 211][17] years of age) examined the prevalence of APS and positive symptoms and found an age effect, with 22.6% of the younger group reporting APS or positive symptoms, especially (attenuated) hallucinations, compared with 7% of the older age group.[17] In the younger sample, (attenuated) psychotic symptoms caused distress in 89% and were related to higher psychiatric morbidity and lower functioning.[16] When the frequency and onset/worsening criteria of attenuated psychosis syndrome were applied, the prevalence rate decreased by 66% to 7.7%.[16]

The age range at highest risk of first-episode affective or nonaffective psychosis (ie, 16–40 years of age)[18] has not yet been examined in epidemiological studies of APS. Therefore, our aim was to study the prevalence of APS and attenuated psychosis syndrome within this age range in the general population. Second, prevalence data of attenuated psychosis syndrome criteria were inspected for potential starting points for revisions, especially with regard to the "onset/worsening" criterion originally introduced in the SIPS-related risk criteria to ensure progression to psychosis. Third, we compared APS and the attenuated psychosis syndrome, as well as the potential attenuated psychosis syndrome-revised, for their association with gender, nationality, and age as the risk of psychoses in young adults seems to be higher in men[18] and certain migratory groups,[19] and there is evidence that APS may be age dependent.[11,17] Furthermore, we explored clinical significance by examining psychosocial functioning and the presence of other axis I disorders, as well as help-seeking for mental problems.

Methods

Study Design

Stratified sampling by sex (1:1) was used to randomly select 2941 potential participants aged 16–40 years from approximately 305000 persons of this age group registered in the obligatory population register of the Cantonal Agency for Informatics and Organization (KAIO) of Canton Bern, Switzerland (see online supplementary material "Canton Bern" for details). Address, date of birth, sex, nationality, and parents' names (for minors) were provided for each subject. Telephone numbers were subsequently searched via telephone registers and the Internet. The ethics committee of the University of Bern approved the study. Participation in the telephone interview was considered as providing informed consent.

Procedure and Bias

Recruitment and assessments were conducted over 14 months (June 2011–July 2012), supported by the computer-assisted telephone interviewing technique. We had previously studied the reliability of telephone APS assessments compared with face-to-face assessments in 69 patients and found excellent concordance rates (86%–100%).[20]

To increase response rates, contact was initially established using a 1-page information letter. A lottery with monetary winnings served as an additional incentive (see online supplementary material "Sample" for further details on recruitment).[20,21] First telephone contact was attempted within 2 weeks of sending the letter.

Participants

Eligibility criteria included appropriate age, main residency in Canton Bern (ie, a valid address and not abroad during the assessment period), and an available telephone number. Interviews were discontinued if respondents had (1) a lifetime diagnosis of psychosis (exclusion criterion of attenuated psychosis syndrome) or (2) insufficient German, French, or English language skills. Telephone numbers not answered in 100 attempts at various times and days over several months (including Saturdays) suggested invalid addresses or extended absence, and consequently, lack of eligibility.[22]

Assessments

Psychologists used the SIPS[7] to assess lifetime presence of APS (ie, delusions, hallucinations, or disorganized speech in an attenuated form), their onset, and frequency within the past month, as well as APS-related distress and impact on behavior as a measure of disability. Lifetime help-seeking for mental problems was assessed using the WHO Pathways-to-Care questionnaire.[23] Motivation for help-seeking was assessed with an open question (not specifically related to possible APS) for the following reasons: (1) to avoid a bias toward reporting APS as a help-seeking reason that might occur when relating the question of help-seeking specifically to potential APS and (2) to observe the "right not to know"[24,25] by avoiding any indication that an expert might consider a reported phenomenon to be problematic.

Symptom-independent current and highest-past-year global level of psychosocial functioning was estimated using the Social and Occupational Functioning Assessment Scale (SOFAS) of the *DSM-IV*.[26] A SOFAS score of ≤70 was considered indicative of functional impairment. The mini-international neuropsychiatric interview (MINI)[27] was used to assess current nonpsychotic mental disorders according to *DSM-IV* criteria.

To ensure excellent data quality, interviewers received an intensive 3-month training prior to study commencement, especially regarding psychopathological assessments. Weekly supervision of symptom ratings was provided by F.S.-L./C.M. On average, interviews lasted 48 minutes (range: 24–225 min).

Statistical Analyses

Using SPSS 20, frequencies and percentages were compared using χ^2 tests; interval data that violated the assumption of normality (age) and ordinal data were evaluated using Mann-Whitney *U* tests. Each group of interviewees with APS, attenuated psychosis syndrome, and attenuated psychosis syndrome-revised was compared with those without the respective conditions for differences in age, gender, nationality, psychosocial functioning, present nonpsychotic mental disorders, and help-seeking using the effect sizes Cramer's *V* for categorical data and Rosenthal's *r* for ordinal data. Effect sizes were interpreted rather than significance levels for their assumed sample size independence because in the present large sample ($N = 1229$), even less-than-small effects become significant.[28] The resulting effect sizes of APS and attenuated psychosis syndrome-revised were subsequently compared with those of attenuated psychosis syndrome for significant differences by 1-dimensional χ^2 tests.

Results

Sample Recruitment and Description

The response rate was 66.4%, and the refusal rate was 30.8%. In comparison with the 16- to 40-year-old population of Canton Bern, the 1229 interviewees (table 1) partially differed in age distribution; 26- to 30-year-olds were underrepresented (mainly determined ineligible due to lack of available telephone number), while 36- to 40-year-olds were overrepresented. This age distribution also led to an overrepresentation of married or cohabitating subjects (table 1). However, this partial age group bias would only compromise the sample's representativeness and, consequently, results, if relevant age effects were detected (see below for results). Further details on sample representativeness are provided in the "Sample" section of the online supplementary material.

Prevalence of APS

APS were reported by 159 (12.9%) of the 1229 interviewees (figure 1).

Frequency of APS

Ninety (7.3%) interviewees reported APS during the past month, 47 (3.8%) with at least weekly occurrence according to the frequency criterion of the attenuated psychosis syndrome. Furthermore, 63 (7.2%) reported a lifetime occurrence of APS (but not during the past month) and 6 (0.5%) could not give even a rough estimate of the last occurrence (figure 1).

Onset/Worsening of APS

Only 13 (1.1%) interviewees met the criterion of onset/worsening within the past year, 5 (0.4%) of these also met the frequency criterion (figure 1). Twenty-five (2.0%) described APS in a trait-like manner (as "always" having been present at the same frequency and severity), 7 (0.6%) of them would have met the frequency criterion. In addition, 108 (8.8%) experienced the onset or worsening of APS more than 1 year ago, and 13 (1.1%) could not estimate the time of onset/worsening (figure 1).

Distress and Disability Caused by APS

Only 20 of the 159 (12.6%) interviewees with APS reported feeling very distressed by them; an additional 38 (23.9%) felt slightly distressed. Altogether, 92 (57.9%) interviewees with APS reported no distress associated with APS, 9 (5.6%) could not estimate both the potential distress and the behavioral effects of APS. Regarding behavioral consequences, 29 (18.2%) reported significant consequences and an additional 46 (28.9%) some effects of APS on their behavior, while 74 (46.5%) denied any influence. In total, 86 (54.0%) interviewees with lifetime APS reported distress or behavioral impact (ie, 7.0% of all interviewees) (figure 1).

Distress and/or behavioral impact were more frequent in those with recent and/or frequent APS: 72.4% of interviewees with APS in the past month (5.1% of all interviewees; $n = 63$) and 84.8% of those with at least weekly APS (3.2% of all interviewees; $n = 39$) confirmed 1 of the 2, whereas only 33.8% of those with only lifetime but no present APS ($n = 68$) confirmed any distress or behavioral impact. Of the 5 interviewees with APS meeting onset/worsening and frequency criteria, 4 (80.0%; 0.3% of all interviewees) also reported related distress or behavioral impact (figure 1) and thereby met criteria for attenuated psychosis syndrome. Symptom, frequency, and distress/disability criteria were met in 32 persons (2.6%) not reporting APS in a trait-like manner. Adding the onset/worsening criterion thus excluded 2.3% of those feeling distressed/disabled by APS.

Introduction of the Attenuated Psychosis Syndrome-Revised

As discussed in detail below, we propose a revision of the onset/worsening criterion of attenuated psychosis syndrome. Against the background of early detection, the onset criterion was originally introduced to ensure that a certain progression in symptomatology would lead to frank psychosis. However, attenuated psychosis syndrome was proposed as a self-contained syndrome that, other than risk criteria, requires no progression in symptomatology (ie, toward the development of frank psychosis). Thus, we propose that the onset/worsening criterion should be revised to differentiate from schizotypal traits (ie, to "not always having been present in its current severity"). When the proposed attenuated psychosis syndrome-revised is defined by the original symptom, frequency, and

Table 1. Further Sociodemographic Characteristics of Persons With a Complete Interview Compared With the Canton Bern General Population Between 16 and 40 years According to the Swiss Statistics Web Site, Maintained by the Federal Statistical Office (http://www.bfs.admin.ch)

	Canton Bern Statistic (Year of Latest Statistic)	Complete Interview (N = 1229)	One-Dimensional χ^2 Test
Age ranges (%)	Mean age: 28.6 years (2009)	Mean age: 30.7 years	
16–20 y	18.2	16.1 (w = 0.12)[b]	
21–25 y	18.6	15.6 (w = 0.16)	
26–30 y	19.9	12.4 (w = 0.38)	$\chi^2(4) = 109.481$, $P < .001$
31–35 y	20.5	22.2 (w = 0.09)	
36–40 y	22.8	33.7 (w = 0.48)	
Gender; % male	48.8 (2011)	47.7	$\chi^2(1) = 0.616$, $P = .43$, $w = 0.02$
Nationality; % Swiss	80.5 (2011)	93.1	$\chi^2(1) = 123.978$, $P < .001$, $w = 0.14$
Marital status (%)			
Single	68.3 (2010)	54.7 (w = 0.20)	
Married/extramarital cohabitation	29.2 (2010)	42.1 (w = 0.44)	$\chi^2(2) = 106.179$, $P < .001$
Separated/divorced/widowed	2.5 (2010)	3.2 (w = 0.28)	
Highest educational level (%)[a]			
ISCED 1		0.6	
ISCED 2		4.5	
ISCED 3b		52.8	
ISCED 3a + 3c		5.4	
ISCED 5a + 6		5.4	
ISCED 5b		31.2	
Current occupation (%)[a]			
Unemployed		2.8	
Education		16.7	
Family management		4.1	
Normal employment		76.5	
Current living condition (%)[a]			
Alone		13.2	
With partner (and children)		54.1	
With children		1.5	
With parent(s)		25.8	
With other relatives, not parents or children		0.7	
With other persons/friends		4.8	
Family history[a,c] (%)			
Psychotic disorder		3.4	
Affective disorder		21.9	
Anxiety disorder		0.9	
Obsessive compulsive disorder		0.3	
Substance use disorder		3.4	
Other mental disorder such as "burn out"		8.4	

Notes: ISCED, International Standard Classification of Education.
[a]Not compared with the Bern statistics because age group–specific data were not provided.
[b]Effect size was the effect size index, w, which measures the discrepancy between paired portions over the cells with w = 0.1 equaling a small effect, w = 0.3 a medium effect, and w = 0.5 a large effect.
[c]In first- or second-degree biological relatives, known and probable main disorder, multiple answers possible.

distress/disability criteria and the revised onset/worsening criterion, its prevalence rate in our sample is 2.6% (n = 32) (figure 1). Henceforth, attenuated psychosis syndrome-revised will be included in the following analyses.

Prevalence of Relevant Symptoms

While attenuated disorganized speech was rarely observed, delusion and hallucinations in attenuated form were similarly frequent (table 2). Thereby, the presence of both frequency and distress/disability criteria was mainly connected to attenuated delusions, while the onset/worsening criterion was equally present in attenuated delusions and hallucinations (table 2). In attenuated psychosis syndrome, attenuated delusions and attenuated hallucinations were equally frequent (75%), while in attenuated psychosis syndrome-revised, attenuated delusions were predominant (96.9%) and attenuated disorganized speech also was present (table 2).

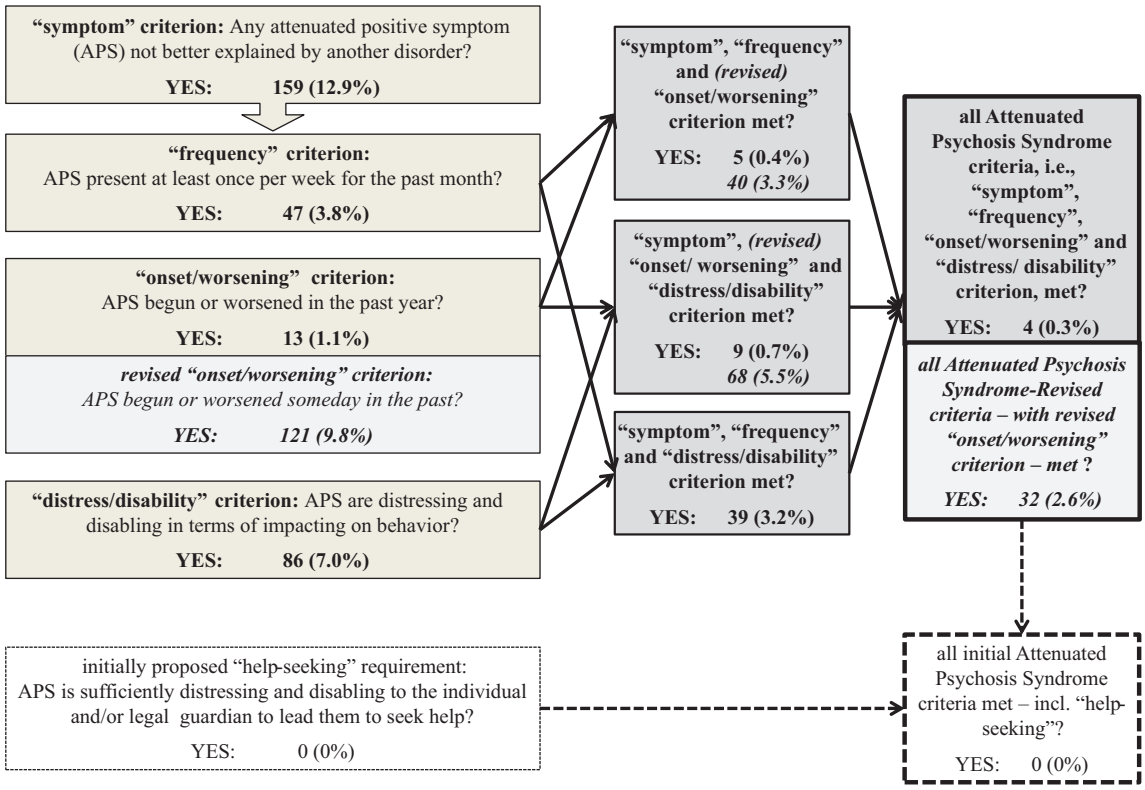

Fig. 1. Prevalence of attenuated psychosis syndrome and its symptom, frequency, onset/worsening, and distress/disability criteria, as well as the "help-seeking" requirement. SIPS, structured interview for psychosis-risk syndrome.[7]

Help-seeking for APS

In total, 284 interviewees (23.1%) reported help-seeking for mental problems. Although the proportion of help-seekers was slightly higher among those with lifetime APS (61 of 159; 38.4%) than without (223 of 1070 (20.9%); $\chi^2(1) = 24.443$, $P < .0001$; $V = 0.141$), and even higher among those with attenuated psychosis syndrome (50.0%) and attenuated psychosis syndrome-revised (65.6%), none of the 61 help-seeking interviewees with APS reported them as the reason for seeking help. Thus, despite the frequent distress and behavioral impact of APS, the "help-seeking" requirement of the earlier attenuated psychosis syndrome proposal[8] was never met (figure 1). Participants' main reasons for help-seeking were depressed mood, anxiety, and family/partner problems in persons with and without APS (see online supplementary table 3).

Associations of APS and Attenuated Psychosis Syndrome /-Revised With Sociodemographic and Clinical Variables

The effect sizes of differences in age, gender, nationality, family history of psychosis (first-degree biological relative), psychosocial functioning (current, highest-past-year, the difference between the two, and the presence of a functional impairment), and current nonpsychotic axis I disorder are displayed in figure 2. No relevant differences of at least small effect size were detected in age, gender, nationality, or family history in any comparison. At least small-to-moderate effects (0.1 = small; 0.3 = moderate) were found in psychosocial functioning and axis I disorders, mainly for APS and attenuated psychosis syndrome-revised (see figure 2 and online supplementary table 4 for details on statistics).

When comparing effect sizes, both APS and attenuated psychosis syndrome-revised had significantly larger effect sizes than attenuated psychosis syndrome in current and highest-past-year SOFAS scores (but not their difference) and in functional impairment (SOFAS ≤70). Furthermore, in APS (but not attenuated psychosis syndrome-revised), significantly larger effect sizes were found for the presence of a current nonpsychotic axis I disorder (see figure 2 and online supplementary table 4).

Discussion

Attenuated psychosis syndrome was included in section III of the *DSM-5* as a condition for further study.[5,6] The main reason for this preliminary placement was the failure to establish its reliability in clinical practice, and questions about its precise nature and nosological status supported this decision.[5] A recent common statement on the placement of attenuated psychosis syndrome in Section III from leading experts in the field of early detection and intervention[4] argued that doubts

Table 2. Prevalence of APS and Their Distribution Across the Other Criteria of the Attenuated Psychosis Syndrome and Attenuated Psychotic Syndrome-Revised (N = 1229)

	AD		AH		ADS		One-Dimensional χ^2 Test[a]	Results of Pairwise Post Hoc Comparisons
	n	%	*n*	%	*n*	%	*df* = 1	
Symptom criterion	97	7.9	89	7.2	8	0.7	15.647	AD = AH > ADS
Frequency criterion	43	3.5	8	0.7	5	0.4	4.100	AD = AH = ADS
Onset/worsening criterion	5	0.4	9	0.7	0	0	7.017	AD = AH = ADS
Distress/disability criterion	63	5.1	33	2.7	0	0	4.500	AD = AH = ADS AD > ADS
Earlier "help-seeking" requirement	0	0	0	0	0	0	—	—
Attenuated psychosis syndrome	3	75.0	3	75.0	0	0	3459.000	AD = AH > ADS
Attenuated psychosis syndrome-revised	31	96.9	14	43.8	4	12.5	3524.033	AD > AH > ADS

Notes: APS, attenuated psychotic symptoms; AD, attenuated delusions; AH, attenuated hallucinations; ADS, attenuated disorganized speech.
[a]For $P < .05$, the critical value for $\chi^2(1)$ is >3.842.

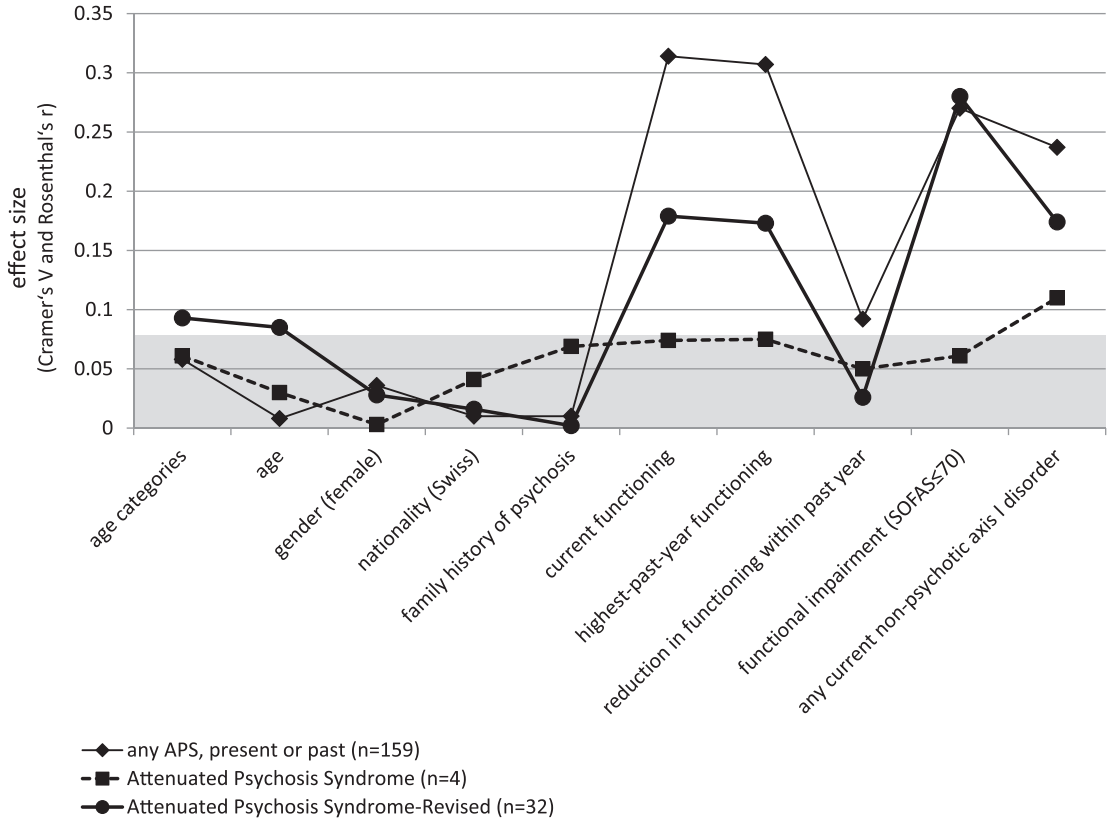

Fig. 2. Effects of attenuated psychotic symptoms (APS), attenuated psychosis syndrome, and attenuated psychosis syndrome-revised on sociodemographic and clinical variables (Cramer's V and Rosenthal's r). 0.1, small effect; 0.3, moderate effect; 0.5, strong effect.

regarding the community prevalence of APS, the level of APS-related distress that leads to help-seeking, and (consequently) the clinical utility of attenuated psychosis syndrome not only necessitate study but also justify the postponement of a final decision on the addition of attenuated psychosis syndrome to the *DSM-5* until such data are available. Relevant knowledge and important background data that can contribute to a future decision are now provided by the Bern Epidemiological At-Risk (BEAR) study.

Representativeness of the Sample

The main strengths of the BEAR study are the assessment of APS in a large, random population sample of a high-risk age segment and its use of interview assessment and criteria identical to those employed by clinical assessments,[10,13] particularly the SIPS, that guided the description of the diagnostically relevant symptoms of attenuated psychosis syndrome.[1,2] Another strength is the intensive training of all interviewers in the assessment instruments and not only of their supervisors.

One possible limitation of the BEAR study is that, unlike in clinical assessments, interviews were not conducted face-to-face. Yet, prior to commencing the study, we found that telephone interviews enabled a reliable assessment of APS[20]; thus, they were chosen over face-to-face interviews because of their assumed better response rate (for reasons such as less time spent traveling). However, compared with the age distribution in Canton Bern (see online supplementary table 1), the unequally distributed availability of telephone numbers introduced some selection bias against individuals aged 26–30 years and toward those aged 36–40 years. This partial age-related selection bias, however, is unlikely to have influenced our findings. No relevant differences, ie, less-than-small effect sizes, were detected when comparing interviewees with APS or attenuated psychosis syndrome/-revised and those without the respective condition for age or age group.

The language skill exclusion criterion introduced another possible source of selection bias (ie, the predominance of Swiss nationals). This bias is common in samples assessed in clinical settings and omnipresent in conversation-based assessments. However, increased rates of psychosis or psychotic-like experiences were reported for blacks in particular rather than for immigrants in general, but with decreased rates reported in persons of Asian background.[19] With a low Asian population but possibly even lower rates of blacks in Canton Bern and our base sample (3.0% and 0.9%; see online supplementary material "Canton Bern"), this possible selection bias would have hardly affected prevalence rates; if anything, it would have lowered rather than increased them. However, future studies should examine prevalence differences of APS and attenuated psychosis syndrome/-revised in immigrant groups.

Overall, therefore, with a response rate of 66.4% and no detectable differences between participants and nonparticipants, our sample can be regarded as sufficiently representative of the young adult population of Canton Bern.

Generalizability

Beside the bias toward Caucasians of Western cultural background, one possible limitation to the generalizability of our results is related to Canton Bern's level of urbanicity. Population studies from the Netherlands, Sweden, and Denmark estimated the risk of schizophrenia as 2.37 times higher in the most urban areas (ie, Amsterdam, The Hague, Stockholm, Gothenburg, and Copenhagen) than in the most rural environments.[29] The Canton of Bern is a mixed urban-rural area; its largest city, Bern, has a population density comparable to that of Gothenburg, but lower than the other studied urban areas (see also "Canton Bern" in the online supplementary material). Thus, the reported prevalence rates might slightly underestimate prevalence rates in urban areas with higher population densities, which should be studied in the future.

Another limitation is that our age restriction was intended to capture the segment of the age distribution at highest risk of psychosis (ie, 16–40 years).[18] However, attenuated psychosis syndrome does not include an age restriction and can be diagnosed in persons aged ≤15 and ≥41 years. Studies of children and adolescents have reported an age effect in early and late adolescence,[16,17] and it was argued that special research is warranted to detect APS-related developmental peculiarities in young age groups.[17,30] However, it is not known whether there also are peculiarities of older age (eg, hearing problems)[31] that influence the presentation of APS.

Prevalence of Attenuated Psychosis Syndrome Criteria

With a lifetime prevalence rate of almost 13%, APS were not rare in our sample; they were more frequent than the 7% of psychotic symptoms in 13- to 15-year-olds and less frequent than the 22.6% of (attenuated) psychotic symptoms in 11- to 13-year-olds.[17] However, it is not clear whether, as in the younger adolescent sample,[16] the whole range of APS, including schizotypal features, was considered likewise in the assessments of manifest psychotic symptoms with the schedule for affective disorders and schizophrenia for school-aged children in the older sample.[17] If not, the true prevalence of APS might well exceed the reported rate.

When APS occurred in our sample, they were predominantly infrequent and, if infrequent, rarely experienced as a cause of distress or behavioral impact. Therefore, like other symptoms (eg, depressed mood or loss of interest/pleasure used as diagnostic criteria for major depressive disorders), frequency thresholds—whether explicitly stated as in attenuated psychosis syndrome or implicitly as in major depression ("most of the day, nearly every day")[6(p.160)]—play an essential role in the prevalence and clinical significance of APS. APS that met the frequency criterion of at least weekly occurrence in the past month were far less prevalent (3.8%) and, as found in research with 11- to 13-year-olds,[16] significantly related to distress and behavioral impact.

However, only 57% of our interviewees with APS reported these as recent compared with 94% in 11- to

13-year-olds.[17] Furthermore, only 8% of our interviewees reported that APS began within the past year. Together, these findings suggest that APS might begin in early adolescence and frequently remit during late adolescence and early adulthood. In our sample, prevalence rates decreased by 97% from lifetime APS to attenuated psychosis syndrome, mainly for not meeting the onset/worsening criterion; this was considerably more than the reported 66% decrease in 11- to 13-year-olds.[16] Consequently, the prevalence of combined frequency and onset/worsening criteria in our sample was only 0.4%.

Against the background of early detection, the onset/worsening criterion was originally introduced to ensure that a certain progression in symptomatology would lead to frank psychosis. Yet, even in this area, definitions differed: the Australian criteria, for instance, require the presence of symptoms for (at least!) 1 year.[32] However, attenuated psychosis syndrome was proposed as a self-contained syndrome that, aside from risk criteria, does not require a progression in symptomatology but offers remission, persistence, and progression as equally possible outcomes.[8] Thus, we propose that the onset/worsening criterion be revised to a sole differentiation from schizotypal traits (ie, to the criterion "not always having been present in its current severity"). This would also resolve the logical dilemma of defining the persistence of a syndrome whose onset/worsening criterion restricts the same severity presence of its defining symptoms to 1 year without any alternative diagnostic option for chronic courses longer than 12 months.

Regarding the earlier proposed help-seeking requirement of the distress/disability criterion,[8] none of the interviewees with APS spontaneously listed them as a reason for help-seeking. Consequently, none of the interviewees would have met all initially proposed criteria for attenuated psychosis syndrome. The help-seeking requirement had earlier been proposed to accommodate the assumption that APS meeting onset/worsening and frequency criteria were still too frequent in the general population (which has been disproved by our data) and of little clinical relevance outside help-seeking clinical samples.[3,4,8,14] Our data suggest that even persons with APS or attenuated psychosis syndrome-revised might not seek help primarily for these symptoms but rather for comorbid mental conditions (frequently depression or anxiety). Thus, the requirement that help be sought specifically for the defining symptoms (a criterion not required for any other *DSM* mental disorder) would set far too high of a threshold of diagnosis in the general population and possibly in clinical sample as well. Therefore, the decision to omit the help-seeking requirement from the distress/disability criterion is strongly supported by our findings. Yet, further studies on the relationship between help-seeking and APS in the general population and clinical samples are needed to fully understand the role of APS in help-seeking and service provision. Furthermore, in clinical settings, the rate of help-seeking related to APS might be higher, eg, when treating clinicians would specially ask if patients would like help with their respective APS in addition to any initially and spontaneously named mental problem.

Role of Attenuated Hallucinations, Delusions, and Thought Disorders

In our sample, attenuated delusions and hallucinations were the dominant symptoms with near-equal frequency, while attenuated disorganized speech was rare. However, interviewees with attenuated delusions met frequency and distress/disability criteria more often than those with attenuated hallucinations, who only slightly more frequently met the onset/worsening criterion. Thus, attenuated delusions contributed frequently to attenuated psychosis syndrome and predominately to attenuated psychosis syndrome-revised. This finding of a less pronounced role of attenuated hallucinations is contradictory to the report that, in 11- to 15-year-olds, hallucinations (primarily auditory) were by far the most frequently reported (attenuated) psychotic symptom.[17] Yet, the prevalence of hallucinations seems to decrease over the course of adolescence, indicating that hallucinations might be mostly benign and transitory not only in childhood but also in early adolescence.[17,33] Follow-up of our sample will show whether the mainly infrequent and nondistressing attenuated hallucinations in our sample of 16- to 40-year-olds also are transitory. If so, more research into the distinct features of clinically relevant hallucinatory phenomena will be needed for this age group, too.

Clinical Significance of APS and Attenuated Psychosis Syndrome /-Revised

The fact that APS and attenuated psychosis syndrome-revised were related to psychosocial functioning within the past year and nonpsychotic mental disorders at small-to-moderate effect sizes indicates their clinical significance beyond the subjectively reported distress and behavioral impact associated with them. Effect sizes for attenuated psychosis syndrome were generally much smaller, possibly because a relevant proportion of persons with APS-related clinically significant disability or troubles is missed by the restrictive onset/worsening criterion.

Interestingly, the rate of current *DSM-IV* axis I disorders reported for 11- to 13-year-olds with APS (30.2%)[16] was almost equal to the rate among our interviewees with APS (32.3%).

Conclusion

In its present conceptualization, attenuated psychosis syndrome was found in only 0.3% of our 16- to 40-year-old population sample. In its initially proposed form (with the help-seeking requirement), this syndrome would not

have been present at all in our sample. It seems, therefore, extremely rare in the general population. This was mainly due to the onset/worsening criterion originally included in the APS-related risk criteria to make progression to psychosis more likely. Thus, we propose a revised onset criterion (no onset restriction except for characterization as a trait), while keeping symptom, frequency, and distress/disability criteria. Such an "attenuated psychosis syndrome-revised" occurred in only 2.6% ($n = 32$) of our young adult population and was associated with other mental disorders and impaired psychosocial functioning. This suggests that this revised syndrome possesses greater clinical utility than the original syndrome.[34] Young adults from the general population who meet these revised criteria can be considered troubled and might benefit from supportive measures ranging from monitoring to specific interventions. However, only follow-up will reveal whether APS and attenuated psychosis syndrome/-revised are transient phenomena causing little long-term distress or disability, or clinically relevant symptoms and syndromes requiring intervention to avoid persistent or even increasing distress and disability.

Supplementary Material

Supplementary material is available at http://schizophreniabulletin.oxfordjournals.org.

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