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A latent profile analysis of age of onset in pathological skin picking☆

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ABSTRACT

Background: Pathological Skin Picking (PSP) may begin at any age, but the most common age of onset is during adolescence. Age of onset is a potentially useful clinical marker to delineate subtypes of psychiatric disorders. The present study sought to examine empirically defined age of onset groups in adults with PSP and assess whether groups differed on clinical characteristics.
Method: Participants were 701 adult respondents to an internet survey, who endorsed recurrent skin picking with tissue damage and impairment. Latent profile analysis (LPA) was conducted to identify subtypes of PSP based on age of onset. Then subgroups were compared on demographic and clinical characteristics.
Results: The best fitting LPA model was a two-class solution comprised of a large group with average age of onset in adolescence ($n = 650$; 92.9% of the sample; Mean age of onset = 13.6 years) and a small group with average onset in middle adulthood ($n = 50$; 7.1% of the sample; Mean age of onset = 42.8 years). Relative to the early onset group, the late onset group reported significantly less focused picking, less skin picking-related impairment, lower rates of co-occurring body-focused repetitive behaviors, and trends towards reduced family history of PSP. Individuals in the late onset group also reported increased rates of comorbid depression, anxiety and post-traumatic stress disorder, and were more likely to report that initial picking onset seemed related to or followed depression/anxiety and physical illness.
Conclusion: Findings suggest the presence of two distinct PSP age of onset groups: (1) an early onset group with average onset in adolescence, clinical characteristics suggestive of greater picking-related burden and familiality, and a profile more representative of the general PSP population; and (2) a late onset group with average onset in middle adulthood, increased co-occurring affective and trauma conditions, and initial onset associated with or following other mental health and physical problems. Future replication is needed to assess the validity and clinical utility of these subgroups.

1. Introduction

Increasing empirical attention has been given to pathological skin picking (PSP) – now classified as excoriation (skin-picking) disorder – a psychiatric problem characterized by recurrent picking, scratching and/or squeezing of the skin that is not solely accounted for by a dermatological condition [1]. PSP can be associated with impairment across several domains, including physical (e.g., scars, sores, infections) [2], social (e.g., avoidance of social situations, interference with intimate relationships), psychological (e.g., anxiety, depression, shame), and financial (e.g., monetary loss due to efforts to conceal skin damage or therapeutic services) [3]. Further, affected persons frequently report picking-related interference with academic (e.g., completing homework, studying) and occupational (e.g., job resignation, avoidance of career advancement, productivity loss) functioning [3,4].

Most individuals with PSP report picking in the context of an urge or aversive emotional state (i.e. focused picking style). In other instances, the behavior is performed automatically, without reflective awareness (i.e., automatic picking style) [5]. PSP frequently co-occurs with

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trichotillomania (hair-pulling disorder) and other body-focused repetitive behaviors (e.g., nail biting, etc.) [6]. PSP is also commonly comorbid with depression, anxiety disorders, obsessive-compulsive disorder, body dysmorphic disorder, and substance use disorders [6–8]. Individuals with PSP commonly report a family history of skin picking [9].

PSP historically has received limited research attention, and little is understood about the heterogeneity of the PSP population. Prior research has suggested that clinically meaningful distinctions might be made among those with PSP based on automatic versus focused picking [5] and impulsive versus compulsive picking [10]. Age of onset has also proven to be a useful clinical marker to distinguish between subtypes of various psychiatric disorders, including obsessive-compulsive disorder [11], generalized anxiety disorder [12], panic disorder [13], agoraphobia [14], schizophrenia [15], bipolar disorder [16], and Alzheimer's disease [17]. Studies have revealed differences between early and late symptom onset groups in sex ratio [11–13]; socioeconomic variables [12]; symptom presentation [11,13,16]; co-occurring psychiatric, physical, behavioral and environmental variables [11–13,16]; family history [11,14,16]; treatment response [11]; cognitive functioning [15]; symptom course [16]; and neural structure [17]. Findings support clinical and etiological differences suggestive of a more severe illness presentation in those with early onset disorders [11,13,15–17], which has implications for understanding differences in treatment response and symptom trajectory. Thus, identification of PSP subtypes using age of onset may inform our understanding of individual differences in PSP phenomenology, etiology and treatment outcome.

PSP may begin at any age; however, average onset during adolescence is most commonly reported – particularly in samples drawn from psychiatric clinics, the community and university settings [18]. However, a limited number of studies report a later onset in middle adulthood (i.e., 30 to 39 years) in dermatology clinic samples [18–22]. Odlaug and Grant [23] reasoned that PSP onset prior to versus following puberty might represent a clinically useful means of distinguishing between groups of individuals with PSP. The authors compared individuals with onset before and after the age of 10 years and found similar clinical characteristics between the groups overall, although individuals with earlier onset had a greater treatment seeking delay and were more likely to report automatic picking. A separate study also did not find substantial differences between clinical characteristics of early (prior to the age of 11 years) and late (after the age of 11 years) onset PSP, but showed that only individuals with later onset deviated from normal controls on a cognitive set-shifting task [24]. Although these preliminary studies are informative, in both, the age demarcating early from late onset was not selected empirically.

The present study sought to use latent profile analysis (LPA) to identify age of onset subgroups in a large sample of adults with PSP. A secondary aim was to explore demographic and clinical differences in those empirically defined groups. Based on prior research largely revealing pubertal skin picking onset [18], with a few studies reporting middle adult symptom onset [19–22], we hypothesized that LPA will yield two age of onset groups, including adolescent and adult, and group comparisons will suggest greater severity in the early onset group.

2. Material and methods

2.1. Participants

Participants were drawn from a sample of adult respondents to an internet survey on PSP (i.e., Skin Picking Impact Survey) who met specified criteria for PSP [4]. The survey was posted on advocacy and support websites for individuals with skin picking and related conditions. Interested individuals accessed the survey via a SurveyMonkey (https://www.surveymonkey.com) web link. Initially, a total of 1663 individuals indicated study agreement after reading a university Institutional Review Board-approved informed consent form. See the original publication [4] for details regarding the sample and methodology. Study inclusion was based on report of an age of 18 years or older and endorsement of the following criteria for PSP established through dichotomous (i.e., yes/no) and Likert scale items developed for the original study: (1) current repeated skin picking resulting in tissue damage that would be visible if the skin is not covered (i.e., response of yes to the following questions: *"Do you currently pick/scratch at your skin (picking/scratching includes any behavior that you do to the surface of your skin that has the potential to cause damage. Could include, but not limited to picking, scratching, digging, squeezing, and picking.)?"* and *"Does your picking/scratching result in tissue damage that you could see if it isn't covered or hidden?"*); (2) significant skin picking-related impairment in one of five life domains (i.e., rating of 3 or higher on a 1-to-9 Likert scale assessing skin picking-related impairment in home management, social life, close relationships, work, or academic life); and (3) presence of picking behavior not due to delusions (i.e., endorsement of 'Never/Almost Never (0-10%)' for the following question: *"How often do you pick/scratch your skin because you believe small bugs/insects are crawling on/in your skin or in response to voices others may not be able to hear (e.g., deceased relatives, beings from another planet, etc.)?"*). Participants who were younger than age 18 ($n = 9$) or who failed to complete any of the eligibility items ($n = 575$) were excluded. This included failure to report age ($n = 237$), engagement in current skin picking ($n = 245$), whether skin picking resulted in damage ($n = 49$), whether picking was due to bugs/insects or voices ($n = 382$), or a rating on at least one of the Likert scale interference items ($n = 554$). A sizeable number of participants ($n = 732$) completed informed consent but closed the survey prior to finishing, which contributed largely to the missing data. This yielded an original sample of 760 participants. The present study includes the 701 of these respondents who met criteria for PSP and completed a question regarding age of initial skin picking onset (i.e., *"About how old were you when you first began to pick/scratch your skin on most days for at least 2 weeks or longer?"*). This subsample had an average chronological age of 28.2 years ($SD = 6.7$) and was predominantly female ($n = 665$; 94.9%) and Caucasian ($n = 610$; 87.4%), with just over half endorsing single/never married status ($n = 375$; 53.8%).

2.2. Measures

2.2.1. Skin picking impact survey [4]

This is a comprehensive internet survey assessing a range of skin picking-related issues, including (a) phenomenology; (b) clinical characteristics; (c) treatment seeking, utilization and outcome; and (d) impact. Participants were queried regarding treatment seeking status (i.e., *"Have you ever received treatment or sought professional help for your skin picking/scratching?"*) and age at first treatment seeking (i.e., *"About how old were you when you first sought or received treatment for picking/scratching?"*). Treatment seeking delay in years was assessed by subtracting age of onset from age at which treatment was first sought. Participants were also asked to rate their perceived benefit from treatment (i.e., "*Compared with how your skin picking/scratching was before you started treatment, your skin picking/scratching is now:*"), using the following anchors adapted from the Clinical Global Impressions – Improvement Scale [25]: "Very Much Improved," "Much Improved," Minimally Improved," "Unchanged," "Minimally Worse," "Much Worse," and "Very Much Worse". Finally, participants were asked *"What type of professional did you first tell about your skin picking/scratching?"* and *"Please check any of the following interventions that you have had for your skin picking/scratching."*

Psychiatric comorbidity was assessed via a checklist of mental illnesses other than picking/scratching (i.e., *"Have you ever been diagnosed with a mental illness other than skin picking/scratching?"*). Participants were also asked if they had ever engaged in body-focused repetitive behaviors besides skin picking, including: *"Recurrent picking/scratching at your nose resulting in damage (e.g., frequent nosebleeds, painful scabbing, a hole in the nasal passageway)?"*, *"Recurrent biting of nails resulting in*