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Trichotillomania and Pathologic Skin Picking: Clinical Comparison with an Examination of Comorbidity

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Background. *Pathologic Skin Picking (PSP) and trichotillomania (TTM) are repetitive behaviors presumed to share clinical characteristics. However, no studies have been conducted examining the clinical and phenomenological differences between PSP, TTM, and those persons with a comorbid PSP + TTM diagnosis. We sought to examine the similarities and differences between these three groups from a clinical viewpoint.*

Methods. *Seventy-seven subjects with PSP, TTM, or PSP + TTM were analyzed for this study. They are comprised of both research subjects and outpatient clinic patients who voluntarily presented for treatment at a large, public university medical center.*

Results. *There were far more similarities than differences in subjects with TTM, PSP, and PSP + TTM. Significant differences, however, were found in time spent picking/pulling, triggers to the behaviors, rates of comorbid depressive disorders, and family history of PSP.*

Conclusions. *This represents the first comparison of PSP, TTM, and comorbid PSP + TTM in the literature. It appears that the three groups are quite similar in their overall clinical presentation and severity. However, further research is needed to validate our findings and should focus on ways in which effective treatment may be achieved.*

Keywords Trichotillomania, Pathologic skin picking, Impulse control disorders

INTRODUCTION

Pathologic skin picking (PSP), a condition characterized by the repetitive or compulsive picking of skin which causes tissue damage, has an estimated prevalence of 2–4% in collegiate and dermatological populations (1–3). Individuals suffering from PSP report distress caused by an inability to control the behavior (4). Gender distribution in PSP research subjects has a heavy preponderance of females (87.1–94.1%) and appears to have a bimodal age of onset either in the early 20s or between 30 and 45 years of age (1,5–6).

Trichotillomania (TTM) is characterized by repetitive, intentionally performed pulling that causes noticeable hair loss and results in clinically significant distress or functional impairment (7). Clinically significant hair-pulling has been reported in 0.6%–3.4% of college students (8). As in PSP, TTM appears to be more common in females (93.2% of a recent sample of 1,697 individuals with TTM) (9). TTM is associated with significant social and occupational disability (1,9). The mean age of onset for trichotillomania is approximately 11–13 years of age (10–11) and only 65% of individuals with trichotillomania have ever sought treatment for their hair-pulling (9).

PSP and TTM have long been thought to share several phenomenological and clinical similarities (5). Both disorders are characterized by repetitive, compulsive grooming behaviors that are irresistible and that lead to significant negative consequences (e.g., baldness, severe skin excoriations). Clinical studies suggest that both disorders are more common in females (8–9). The majority of patients report significant psychosocial impairment, including feelings of shame and embarrassment as a result of their behavior.

Although phenomenologically similar in some respects, important differences appear to exist between these disorders. For example, PSP appears to have a bimodal age of onset whereas TTM has onset in adolescence. Rates of comorbid psychiatric disorders also appear to differ between PSP and TTM. For example, bipolar disorder appears to co-occurr more

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frequently in individuals with PSP (25%) than in TTM (2.5%) (12). Similarly, rates of borderline personality disorders in PSP have been documented at 26%, (13) while rates are notably lower in TTM subjects (14%) (14). The only previous study to compare these disorders directly found that individuals with TTM reported higher rates of dissociation while engaging in the behavior than subjects with PSP (15). Finally, although many similarities exist between these disorders, it is unclear why PSP appears to be significantly more common than TTM. A study of 102 adolescent inpatients revealed that 11.8% of patients had PSP whereas only 3.9% had TTM (16).

Although PSP and TTM frequently co-occur, this comorbidity has been examined in only two studies. In one study of 34 subjects with PSP, the rate of current TTM was 6% (6). In another study which examined 31 PSP subjects, current TTM was found in 23% of subjects (13). The clinical correlates associated with comorbidity, however, were not examined in either study.

Because little data are available regarding the similarities and differences of PSP and TTM, and no study has yet examined how the co-occurrence of these disorders affects clinical presentation, we designed this study to examine the demographics, clinical characteristics, and treatment data of individuals with PSP, TTM, and PSP co-occurring with TTM. We hypothesized that individuals with PSP and TTM would appear clinically similar but that those individuals with both disorders would have a more severe clinical presentation.

METHODS

Subjects

The study included 77 male and female adults (65 [84.4%] females; mean age = 33.6 ± 10.6 [range 17–59]) who met current DSM-IV criteria for TTM or met the proposed diagnostic criteria for PSP:

1. Recurrent picking at or otherwise manipulating the skin that results in noticeable damage to the skin;
2. An increasing sense of tension, or an unpleasant emotional or physical state, immediately before picking the skin, or when trying to resist picking;
3. Pleasure, gratification or relief at the time of picking;
4. The disturbance causes clinically significant distress or impairment in social, occupational, or other important areas of function;
5. The skin picking is not due to a substance (e.g., cocaine, amphetamine) or a general medical condition (e.g., eczema, psoriasis, diabetes, liver or kidney disease, Hodgkin's disease, polycythemia vera, systemic lupus); and
6. The skin picking is not better accounted for by another mental disorder (e.g., body dysmorphic disorder, obsessive compulsive disorder, delusion disorder, substance use disorder) (7).

Subjects were recruited from a completed pharmacological treatment study for PSP, (17) an ongoing pharmacological study for TTM, or from an ongoing outpatient study examining the longitudinal course of impulse control disorders. Those subjects who did not meet criteria for one of the pharmacological studies were included in the outpatient study. All subjects who contacted us for treatment were, therefore, included in this database if they meet the general inclusion criteria:

1. Primary diagnosis of current DSM-IV TTM or of PSP based on above criteria;
2. Age 17 or older; and
3. Able to be interviewed in person.

The only exclusion criteria were the presence of an organic mental disorder or inability to understand and consent to the study. The Institutional Review Board of the University of Minnesota approved the studies and the consent statements. All study participants provided voluntary written informed consent.

Assessment

Thirty-three subjects with a primary diagnosis of PSP, 24 with TTM, and 20 subjects with both PSP and TTM, were all examined using a semi-structured interview focusing on clinical features of PSP or TTM (e.g., time spent picking/pulling; amount of time individuals were conscious of the picking/pulling, triggers to the behavior). In addition, all subjects underwent the Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I) (18) to assess current (past 12 months) and lifetime comorbidity. Subjects were asked whether they had previously received treatment for picking or pulling. The current study did not detail types of treatments received or examine response to previous treatments.

Subject assignment to one of the three groups was determined by their current (last 12 months) diagnostic condition. Subjects were assigned to the comorbid group (i.e., TTM and PSP) only if they met full criteria for both disorders and the criteria were met for the same current period (last 12 months).

Clinician assessment of behavior severity included the Clinical Global Impression-Severity (CGI) scale (19). The CGI Severity scale is a reliable and valid, 7-item scale assessing severity in picking/pulling symptoms at the baseline visit. The scale ranges from 1 = *not ill at all* to 7 = *among the most severely ill*.

The Sheehan Disability Scale (SDS), (20) a reliable and valid 3-item, self-report measure, was used to assess the overall psychosocial interference due to picking and/or pulling. The three questions in the SDS examine the degree to which the behavior interferes with work/school, social life and family life/home responsibilities.

Each subject also underwent a semi-structured family history interview to examine psychiatric disorders, including PSP and TTM, in first-degree relatives. Although no relatives were interviewed, probands were asked about all first-degree relatives to assess a range of psychiatric disorders (depression, bipolar disorder, substance use disorders, anxiety disorders, psychotic

disorders, eating disorders, somatoform disorders, impulse control disorders, and attention deficit hyperactivity disorder).

Data Analysis

Subjects with co-occurring PSP and TTM were compared to those with only TTM or PSP on measures of current psychosocial functioning and current symptom severity. Between-group differences were tested using an analysis of variance, chi-square, or Kruskal-Wallis, a non-parametric test of ranked data for strongly skewed distributions. All tests of hypotheses were performed using a two-sided significance level of .05. We did not adjust the alpha level to reflect all statistical comparisons because this is one of the first studies of this topic and therefore is exploratory.

RESULTS

The three groups did not differ significantly on demographic variables (Table 1). The majority of subjects in all three groups were female and mean age of onset was in early adolescence.

Although many clinical features were similar between groups, some important differences emerge (Table 2). The time spent on pulling/picking behavior was significantly different between groups, with the TTM group spending significantly less time engaging in the behavior each day compared to subjects with PSP or with both TTM and PSP (Kruskal-Wallis = 6.187; *df* = 2; *p* = .045) (Table 2).

Sight was significantly more likely to be a trigger for behavior in the comorbid PSP + TTM group (*P* = .032). Seeking medication treatment or psychotherapy for the picking or pulling did not differ significantly between groups.

Although functional impairment did not statistically differ between groups based on the Sheehan Disability Scale scores, subjects with comorbid PSP and TTM had numerically higher scores (13.15 ± 6.87) than those with just TTM (7.86 ± 6.76) or PSP (10.88 ± 5.87).

Although rates of current (past 12 months) and lifetime comorbid psychiatric disorders were high in all three groups, psychiatric comorbidity generally did not differ between groups (Table 3). Interestingly, rates of comorbid depression were significantly lower in the comorbid group than in either the PSP or the TTM groups (Table 3). There was also a trend toward higher rates of bipolar disorder in the comorbid group (*p* = .065).

Psychiatric disorders in the first-degree relatives of all subjects were common with 63.9% to 80% of subjects having at least one first-degree relative with a psychiatric disorder. Subjects with PSP + TTM and PSP were more likely, on a trend level, to have at least one first-degree relative with pathologic skin picking (35% and 30.3%, respectively) compared to subjects with TTM (8.3%) (*P* = .069).

DISCUSSION

To our knowledge, this is the first study to examine how comorbidity of hair pulling and skin picking affects clinical presentation (e.g., clinical severity, psychosocial functioning).

Table 1 Demographics of Individuals with Trichotillomania, Pathologic Skin Picking and Both Disorders Comorbid

	Pathologic Skin Picking (PSP) *n* = 33	Trichotillomania (TTM) *n* = 24	PSP + TTM *n* = 20	Statistic	*df*	*p*-value
Age Mean (± SD), years	33.6 (10.9)	37.5 (11.6)	35.6 (12.8)	0.808[f]	2,74	.450
Gender, *n* (%)						
Female	28 (84.8)	18 (75.0)	19 (95.0)	3.325[c]	2	.190
Male	5 (15.2)	6 (25.0)	1 (5.0)			
Ethnicity, *n* (%)						
Caucasian	30 (90.9)	23 (95.8)	20 (100)	Fisher	n/a	.754
African American	1 (3.0)	1 (4.2)	0 (0)	Exact		
Asian American	2 (6.1)	0 (0)	0 (0)			
Education, *n* (%)						
High School	7 (21.2)	7 (29.2)	6 (30.0)	4.518[c]	8	.808
Some college	5 (15.2)	1 (4.2)	3 (15.0)			
Trade school	1 (3.0)	0 (0)	0 (0)			
College degree	15 (45.5)	10 (41.7)	8 (40.0)			
Post-college degree	5 (15.2)	6 (25.0)	3 (15.0)			
Marital Status, *n* (%)						
Single	15 (45.5)	9 (37.5)	12 (60.0)	2.300[c]	4	.681
Married	16 (48.5)	13 (54.2)	7 (35.0)			
Widow/Separated/Divorced	2 (6.1)	2 (8.3)	1 (5.0)			

[f]F statistic (Analysis of Variance).
[c]Chi-square.

Table 2 Clinical Characteristics of Trichotillomania, Pathologic Skin Picking and Both Disorders Comorbid

	Pathologic Skin Picking (PSP) *n* = 33	Trichotillomania (TTM) *n* = 24	PSP + TTM *n* = 20	Statistic	*df*	*p*-value
Age behavior became problem Mean (± SD), years	11.6 (8.4)	13.0 (8.2)	14.3 (12.2)	0.503[f]	2,73	.607
Number of sites picked/pulled Mean (± SD), [range]	2.24 (1.17) [1,5+]	2.21 (1.41) [1,5+]	2.40 (1.353) [1,5+]	0.135[f]	2,74	.874
CGI Severity Mean (± SD), [range]	4.58 (0.90) [3,7]	4.53 (1.06) [3,7]	4.94 (0.899) [4,7]	1.030[f]	2,62	.363
Sheehan Disability Scale Mean (± SD), [range]	10.88 (5.87) [0,21]	7.86 (6.76) [0,25]	13.15 (6.866) [3,28]	2.294[f]	2,41	.114
Time Spent engaging in behavior (minutes)	105.78 (108.9)	56.79 (64.1)	121.56 (126.4)	1.543[f]	2,59	.222
Mean (± SD), [range]	[20,480]	[5,180]	[10,480]	6.187[ckw]	2	**.045**
{mean rank}	**{ 33.94 }**	**{ 21.11 }**	**{ 35.72 }**			
Previously received treatment, *n* (%)						
Medication	21 (63.6)	18 (75.0)	14 (70.0)	0.854[c]	2	.653
Therapy	5 (15.2)	7 (29.2)	9 (45.0)	5.657[c]	2	.059
Percentage of time aware of behavior Mean (± SD), [range]	68.9 (30.0) [10,100]	78.7 (32.5) [10,100]	86.1 (20.2) [50,100]	2.239[f]	2,71	.114
Symmetry, *n* (%)	6 (18.2)	3 (12.5)	2 (10.0)	Fisher Exact	n/a	.772
Prior Psychiatric Hospitalizations, *n* (%)	3 (15.0)	1 (4.2)	2 (10.0)	Fisher Exact	n/a	.494
Proxy pulling/picking n (%)	6 (**18.2**)	0 (**0**)	0 (**0**)	Fisher Exact	n/a	**.013**
Triggers, *n* (%)						
feel	20 (60.6)	10 (41.7)	9 (45.0)	2.339[c]	2	.311
sight	6 (**18.2**)	2 (**8.3**)	8 (**40.0**)	6.882[c]	2	**.032**
stress	5 (15.2)	9 (37.5)	8 (40.0)	5.130[c]	2	.077
boredom	9 (27.3)	10 (41.7)	4 (20.0)	2.631[c]	2	.268
mood	2 (6.1)	0 (0)	0 (0)	Fisher Ex	n/a	.504
loneliness	0 (0)	1 (4.2)	1 (5.0)	Fisher Ex	n/a	.323
tired	2 (6.1)	1 (4.2)	1 (5.0)	Fisher Ex	n/a	1.0
Number of places pulled/picked, *n* (%)						
1	10 (30.3)	9 (37.5)	7 (35.0)	5.190[cn]	6	.520
2	11 (33.3)	9 (37.5)	4 (20.0)			
3	9 (27.3)	2 (8.3)	5 (25.0)			
4	0 (0)	0 (0)	2 (10.0)			
> 4	3 (9.1)	4 (16.7)	2 (10.0)			

[f]F statistic (Analysis of Variance).
[c]Chi-square.
[cn]Chi-Square ("4" and "> 4" were combined into "> 3" for test).
[ckw]Chi-Square (Kruskal-Wallis; a non-parametric test of ranked data).

This is also a fairly broad sample of individuals with these disorders (our study had very broad inclusion/exclusion criteria) which may increase the generalizability of the results.

Consistent with our first hypothesis, this study demonstrated that individuals with PSP, TTM, and PSP + TTM share substantial clinical similarities. Age of onset, gender ratio, clinical severity, and psychosocial functioning were all essentially the same across groups and consistent with prior studies examining these variables (10–11). One difference in this study compared to previous research was that the age of onset for PSP (11.6 years old) was lower than previous samples and did not demonstrate a bimodal age of onset (1,5–6).

Although all groups had similar rates of obsessive compulsive disorder (OCD), the rates in our sample appear lower than in previous studies. Our lifetime rate of comorbid OCD in the PSP group (15.2%) is slightly lower than rates reported in previous studies (19.0%), (15) and our rate of comorbid OCD (8.3%) in the TTM group is also lower than the rate (13.4%) generally seen in TTM (12). One reason for the lower rate in the PSP group is that this study only diagnosed PSP if the picking was not primarily due to OCD or body dysmorphic disorder. Previous studies may have elevated rates due to including individuals who pick secondary to OCD and thereby received both diagnoses. One possible explanation for the lower rate of

Table 3 Comorbidity and Family History in Individuals with Trichotillomania, Pathologic Skin Picking and Both Disorders Comorbid

	Pathologic Skin Picking (PSP) *n* = 33	Trichotillomania (TTM) *n* = 24	PSP + TTM *n* = 20	Statistic	*df*	*p*-value
Comorbid Current Disorders, *n* (%) (past 12 months)	6 (**18.2**)	7 (**29.2**)	0 (0)	Fisher Ex	n/a	**.018**
Any depressive disorder	0 (0)	0 (0)	2 (10.0)	Fisher Ex	n/a	.065
Any bipolar disorder	0 (0)	2 (8.3)	1 (5.0)	Fisher Ex	n/a	.256
Any anxiety disorder	4 (12.1)	2 (8.3)	3 (15.0)	Fisher Ex	n/a	.902
Obsessive compulsive disorder	2 (6.1)	0 (0)	0 (0)	Fisher Ex	n/a	.504
Any somatoform disorder	1 (3.0)	1 (4.2)	0 (0)	Fisher Ex	n/a	1.0
Any substance use disorder	3 (9.1)	1 (4.2)	1 (5.0)	Fisher Ex	n/a	.852
Attention deficit hyperactivity disorder	12 (36.4)	11 (45.8)	5 (25.0)	2.046[c]	2	.359
Any comorbid current disorder						
Comorbid Lifetime Disorders, *n* (%)						
Any depressive disorder	12 (36.4)	10 (41.7)	4 (20.0)	2.464[c]	2	.292
Any bipolar disorder	0 (0)	0 (0)	2 (10.0)	Fisher Ex	n/a	.065
Any anxiety disorder	1 (3.0)	3 (12.5)	2 (10.0)	Fisher Ex	n/a	.417
Obsessive compulsive disorder	5 (15.2)	2 (8.3)	4 (20.0)	Fisher Ex	n/a	.547
Any somatoform disorder	2 (6.1)	0 (0)	0 (0)	Fisher Ex	n/a	.504
Any substance use disorder	1 (3.0)	2 (8.3)	1 (5.0)	Fisher Ex	n/a	.813
Attention deficit hyperactivity disorders	3 (9.1)	1 (4.2)	1 (5.0)	Fisher Ex	n/a	.853
Any comorbid lifetime disorder	18 (54.5)	16 (66.7)	9 (45.0)	2.116[c]	2	.347
Subjects with at least one first degree relatives with the following psychiatric disorders, *n* (%)						
Any depressive disorder	3 (9.1)	7 (29.2)	4 (20.0)	Fisher Ex	n/a	.146
Any bipolar disorder	0 (0)	1 (4.2)	0 (0)	Fisher Ex	n/a	.571
Any anxiety disorder	2 (6.1)	2 (8.3)	1 (5.0)	Fisher Ex	n/a	1.0
Obsessive compulsive disorder	2 (6.1)	1 (4.2)	4 (20.0)	Fisher Ex	n.a	.187
Any somatoform disorder	0 (0)	0 (0)	0 (0)	n/a	n/a	n/a
Trichotillomania	2 (6.1)	3 (12.5)	4 (20.0)	Fisher Ex	n/a	.323
Pathologic skin picking	10 (30.3)	2 (8.3)	7 (35.0)	Fisher Ex	n/a	.069
Pathologic nail biting	7 (21.2)	6 (25.0)	1 (5.0)	Fisher Ex	n/a	.173
Alcohol Use Disorder	5 (15.2)	8 (33.3)	4 (20.0)	2.738[c]	2	.254
Substance use disorder	1 (3.0)	1 (4.2)	2 (10.0)	Fisher Ex	n/a	.678
Attention deficit hyperactivity disorder	0 (0)	0 (0)	0 (0)	n/a	n/a	n/a
Any psychiatric disorder	21 (63.6)	19 (79.2)	16 (80.0)	2.410[c]	2	.300

[c]Chi-square.

OCD seen among our subjects with TTM might be that our subjects have subclinical symptoms of OCD but did not meet full criteria. Because we did not assess OCD symptoms using a standard scale (for example, the Yale Brown Obsessive Compulsive Scale), (21) we most likely missed subclinical OCD symptoms.

Interestingly, our arguably most severely ill group (as defined by higher scores on the Sheehan Disability Scale and the CGI) had the lowest rate of comorbid depressive disorder. One explanation for this possible inconsistency is that the comorbid group may have been more likely to seek mental health treatment for depression, although they did not seek it for their picking or pulling. Therefore, depression in these subjects may actually have been better treated and therefore, was not a current disorder. Because we limited the Sheehan Disability Scale assessment to only the effects of the picking or pulling in a subject's life, it is not surprising that those who both picked and pulled would have greater interference in functioning. As with OCD symptoms, we did not examine subclinical depressive symptoms in any group and therefore the comorbid group may still have significant depressive symptoms that did not meet full diagnostic criteria. Future research should examine depressive and anxiety symptoms and their relation to functional impairment.

Some clinical differences between PSP and TTM were found. For example, individuals with PSP spent significantly more time picking than individuals with TTM spent pulling. In addition, PSP subjects were less likely to have received

psychotherapy. Clinically, these findings suggest that individuals with PSP expend a considerable amount of time on their behavior and yet are not asking or receiving help for this problem. We have noticed that many people who come for treatment of PSP report never having known that this was a potentially treatable mental health issue, and that if they had known, they would have sought treatment earlier. They often cite the amount of time spent picking as one of the more distressing aspects of this disorder. Public awareness of PSP, perhaps through formal recognition by DSM, may result in more individuals seeking treatment.

Individuals with PSP were also more likely than those with TTM to have at least one first-degree relative who also pathologically picked. Whereas rates of TTM in family members did not appear to differ between groups, rates of family members who picked were more common in individuals with PSP. Although there is growing research into the genetics of TTM, (22–24) no such research specifically focuses on PSP. These findings suggest that perhaps TTM and PSP are derived by unique genetic contributions instead of a genetic vulnerability to pathologic grooming.

We hypothesized that having concomitant PSP with TTM would result in a greatly severity of illness and this hypothesis was only partially supported by our data. Subjects with both behaviors reported spending significantly more time picking and pulling than either the solitary TTM or PSP group. The comorbid group spent a mean of approximately 2 hours each day engaging in repetitive behaviors. Even though the amount of time spent picking/pulling was greater in the comorbid group, the comorbid group did not report any greater functional impairment or overall clinical severity as measured by the Sheehan Disability Scale and the CGI respectively. Given that the comorbid group was more likely to have previously received therapy for their behaviors, the question remains how this previous therapy may have influenced the current assessment of functional impairment and clinical severity.

The question remains whether having both behaviors concurrently necessitates any different treatment approaches. Although there is no published research that we are aware of that has addressed this question, this study found that having both disorders simultaneously was associated with a significantly greater chance of having sight be the primary trigger for the repetitive behavior. As promising psychosocial interventions are being developed for the treatment of TTM and PSP, (25–28) it is still unclear if perhaps tailoring these treatments to address different triggers when both disorders occur simultaneously may improve treatment outcome. Subjects in this sample were not analyzed separately based on triggers so the percentage of time the subjects were aware of their behavior in the triggered-by-sight group is unknown and should be further examined.

This study has several limitations. First, our sample was small and comprised only of individuals seeking treatment (either therapy or medication), and therefore it is unclear to what extent these results generalize to individuals with TTM and PSP in the community. Larger, longitudinal samples of individuals suffering from these disorders are needed. Larger samples of subjects with TTM and PSP have been studied (9,29) but those studies have involved anonymous Internet-based surveys. Only by using multi-center studies or telephone surveys would it seem possible to have a large sample of one-to-one interview data for TTM and PSP. Second, although subjects were asked extensively about family history, no interviews were conducted with family members and no control groups were used. Third, our study did not use measures to examine subclinical OCD, anxiety or depressive symptoms which may in fact be more clinically relevant than categorical comorbid disorders (21). Fourth, it is unclear whether current or lifetime comorbidity is more clinically meaningful given the waxing and waning quality of these disorders. We have reported both because our measures assess both current (e.g., SDS, CGI) and lifetime (e.g., age of onset, prior hospitalization) symptoms. Although there exist several limitations, the study inclusion/exclusion criteria were fairly broad (inclusion of those who did or did not meet criteria for treatment studies) and used both self-report and interviewer-administered measures with strong psychometric properties. One must, however, be cautious in interpreting these findings given the small sample size.

Large phenomenological studies are needed to elucidate the clinical characteristics of these disorders, the possible unique features of individuals suffering from both PSP and TTM, and the course of these disorders. Just as research has provided greater information on the neurobiology and treatment of other psychiatric disorders, neuroimaging, genetics, and clinical trials will be needed to identify the pathophysiology of, and treatment for, these disorders.

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