

# Psychological Aspects in Poltergeist Cases

A current theory about poltergeist phenomena is that they represent brief, sporadic and large-scale manifestations of psychokinesis linked to a certain living individual, as opposed to a discarnate spirit. This article briefly examines the underlying basis for the theory, summarizing some of the psychological and neuropsychological aspects that have been associated with individuals found to be at the center of the phenomena.

## Background

Poltergeists are characterized by a relatively short-lived series of anomalous physical disturbances that can include objects seeming to move about on their own and odd percussive noises – raps, knocks, snaps and thuds – that occur despite the absence of a clear physical source. Traditional interpretations tend to consider these phenomena as the mischievous actions of a discarnate spirit or demon, reflected in the historical use of terms such as ‘stone-throwing devil’ and ‘poltergeist’ (in German literally ‘noisy spirit’).<sup>[1]</sup>

However, some early observers noticed instances where the disturbances took place more often in the presence of certain living individuals. For example, although poltergeist disturbances occurring in the home of Francis Perrault, a minister living in France in 1612, were generally seen as demonic, it was also noticed that they became particularly intense whenever his maid was present.<sup>[2]</sup> In the early twentieth century this link began to receive more attention from psychical researchers, partly following an observation made by [William Barrett](#) in 1911, who noted in relation to recent poltergeist outbreaks that they were ‘usually, though not invariably, associated with the presence of a child or young person of either sex’.<sup>[3]</sup>

A possible human connection to the phenomena was more broadly confirmed in the 1970s through a survey of 116 poltergeist cases reported between 1612 and 1974 by parapsychologist [William Roll](#); he found that the phenomena in 92 cases (79%) seemed to be associated with a particular individual, or two individuals in certain instances.<sup>[4]</sup> Similarly, in a 1989 survey of 54 German poltergeist cases, Monika Huesmann and Friederike Schriever found that 63% were linked to a living person.<sup>[5]</sup>

Recognizing the human connection, Roll and fellow parapsychologist [J. Gaither Pratt](#) proposed that poltergeist phenomena might be large-scale displays of psychokinesis, caused sporadically and involuntarily by the individual most closely linked to it (often referred to as the ‘agent’). In 1958 they coined the term ‘recurrent spontaneous psychokinesis’ (RSPK) as an alternate means of conceptualizing poltergeist phenomena.<sup>[6]</sup>

## Psychological Factors

A further indication of a human connection is that phenomena tend to begin at times when the agent is experiencing psychological stress in his or her private or professional life. Roll’s survey found that of 92 poltergeist cases where a likely agent was identified, in 41% of cases the phenomena coincided with changes or family problems.<sup>[7]</sup> Some of these may have been apparent in the agent’s behavior; in others, internal personal issues were only indicated through psychological testing and evaluation (see table 1 at the end of the article).

Changes included a move from one home to another, an illness or extreme psychological stress, and the death of a relative or friend. Family problems could include unresolved

tension between the agent and one or more family members living in the same household. As Roll noted:

The red thread running through most of the cases I have investigated, or am familiar with, is tension in family situations or extensions of them ... In general, we find hostility in the agent which cannot be expressed in normal ways, the main target for the anger being people with whom he [or she] is associated on a daily basis.<sup>[8]</sup>

Parapsychologist [D Scott Rogo](#) suggested that in certain instances the problems extended to nearly all the members of the household, perhaps creating a situation in which they collectively contributed as agents to the disturbances.<sup>[9]</sup> In one such instance

... feelings of hostility, frustration, etc. were common among the entire family. Unfortunately, there was no real method of working off these feelings normally, and no one to “strike-out” at. Unconsciously a poltergeist was created to relieve the tensions and symbolically to attack the house which they wanted to leave. It is not odd then that after the family had fully accepted this matter and put it into words, accepting it as the cause of the phenomena, the disturbances completely ceased.<sup>[10]</sup>

In other instances the agent’s problems are in the workplace, in relations with co-workers or superiors. This has been observed in at least three poltergeist cases. In the first, a young male transcriber in a California legal firm was suspected of psychokinetically generating the disturbances ‘as an unconscious response to the pressure and frustration he experienced in his job with the court reporting firm, and as an expression of personal self-esteem relative to the other persons in the work situation.’<sup>[11]</sup> In the second case, projective psychological tests seemed to indicate that a male shipping clerk in a Florida warehouse harbored feelings of resentment toward one of the warehouse owners, perceiving that owner as being ‘phony and cheating.’<sup>[12]</sup> And in the third case, a female employee in a California factory was found to be ‘uncomfortable with her job because of her personal relationship with her boss.’<sup>[13]</sup>

In cases involving young children and adolescents, the adverse situation faced by the agent may stem in part from a ‘broken home’ – that is, a situation in which the child or adolescent lives with someone other than his/her birth parents, most often due to troubling or unstable circumstances in the lives of the birth parents. For instance, the thirteen-year-old male agent in one case was being raised in his grandmother’s Newark, New Jersey apartment because his mother was incarcerated for killing the boy’s abusive father.<sup>[14]</sup> Two suspected agents in another case, a ten-year-old girl and her younger brother, were also in the care of their grandparents at the time the disturbances began.<sup>[15]</sup>

In three other cases the young agents were being raised by foster parents. In the first, a welfare agency had placed the ten-year-old boy in the care of an elderly couple, since the boy’s father was often incarcerated and his mother had abandoned the family.<sup>[16]</sup> In the second case, a widow took in a nine-year-old boy, who was a ward of the state on account of his alcoholic parents’ inability to care for him.<sup>[17]</sup> And in the third case, a fourteen-year-old girl had been raised from infancy by foster parents who had taken her in after the girl’s mother abandoned her at the hospital less than a year after giving birth.<sup>[18]</sup> In each case the young agent either faced unsettledness with his/her surrogate guardian or may have suffered lingering psychological effects from the anxieties previously experienced in his/her birth parents’ home. Roll’s survey indicated that this kind of situation was present to a fair degree across his broader sample of 116 poltergeist cases: a third involved children under the age of 19 who were living away from home at the time of the poltergeist outbreak.<sup>[19]</sup>

This general characteristic is reflected to some degree in other case collections. Huesmann and Schriever found that in 20% of their German cases the disturbances began when the agent experienced ‘rage, disappointment, or great frustration’ and that 38% involved

children who did not live with both parents.<sup>[20]</sup> Psychologist André Pércia de Carvalho found that in 70% of thirteen Brazilian cases the families were in ‘very disturbed and problematic interpersonal relationships’, which included ‘interpersonal aggression, also people repressing aggressive responses because they were unable to respond to aggressive behavior from others such as their parents and relatives’.<sup>[21] [22]</sup>

Roll further observed that in some cases the social dynamics of the agent’s situation seems to change in response to the presence of investigators. He pointed out that the poltergeist disturbances would be

... destructive only when [agents] were in the company of individuals who seemed to arouse their anger by abuse, confinement, demands and other aversive activities. But when the social environment became supportive, the nonlocal behavior [i.e., the poltergeist phenomena] occurred without destruction of property ... From a psychoanalytic perspective, the destructive incidents could be considered symptoms of “parapsychopathology,” as suggested by Rhine ...<sup>[23]</sup> But when attended by investigators who treat the [agent] with kindness and respect, the occurrences may serve as a positive mechanism to obtain attention and for the researcher to learn more about nonlocal behavior.<sup>[24]</sup>

A clear illustrative example can be found in the poltergeist case involving [Tina Resch](#), the fourteen-year-old girl who was raised from infancy by her foster parents. Raised in a home with other foster children, Tina felt neglected as she got older and felt that she had to compete with the other children for the attention of her foster mother. Often in order to receive any amount of attention at all, Tina would resort to bad behavior, leading to severe punishment that sometimes escalated into physical abuse at the hands of her foster father. During this period of her life, the poltergeist phenomena reported around Tina were often destructive. But the situation turned positive when investigators arrived and focused their attention upon Tina, which seemed to help her overcome her feelings of neglect. During this particular period, the phenomena often took place while the investigators were facing the girl or had her in their line of sight.<sup>[25]</sup>

## Neuropsychological Factors

A psychologically adverse situation in the agent’s life is not necessarily the only factor: most people experience similar problems without accompanying poltergeist phenomena. Roll commented, ‘something else besides repressed hostility must comprise the difference between those who express this unknown via PK, and those who express themselves by normal means, and ... this key difference so far eludes our psychological tests.’<sup>[26]</sup>

An aspect of this unknown factor may be neuropsychological, perhaps related in some way to psychophysiological abnormalities in the agent’s brain and central nervous system. Examining the medical and neurological history of 92 agents identified in poltergeist cases, Roll found that 53% exhibited severe bodily or mental health issues, including seizures, muscular contractions, comas, convulsions, fainting spells and dissociative episodes such as trance.<sup>[27]</sup>

An inverse relation found between poltergeist phenomena and troubling physical or mental health symptoms hints at a possible correlation with alterations in psychophysiology: in periods when the agent exhibits certain symptoms the phenomena are often lulled or in abatement. Roll found such a relation in at least three poltergeist cases he investigated. In the first, no phenomena were reported at times when the suspected female agent suffered stomach cramps and vomiting episodes apparently linked to stress in her home life with her mother.<sup>[28]</sup> In the second, the phenomena abated after the male agent suffered a serious bout

of epileptic seizures that required hospitalization, and resumed when he was treated with medication.<sup>[29]</sup> In the third, the phenomena subsided whenever the female agent suffered migraine headaches and vomiting episodes, returning after she received treatment.<sup>[30]</sup>

Canadian researcher [George Owen](#) noted that in some historical poltergeist cases around the turn of the twentieth century, ‘though the poltergeist individuals are in the main healthy, a few of them have suffered from curious fits or turns’ in health, some of which were apparently linked to neurotic illness, thereby suggesting the possible involvement of a mental health component.<sup>[31]</sup> He cited as an example, containing a component suggestive of this inverse relation, the Bell Witch case in which the female agent reportedly suffered from fainting spells due to anxiety-induced hyperventilation. Owen noted: ‘It was only *after* these fainting fits that the Bell poltergeistery would commence each evening.’<sup>[32]</sup>

Efforts to further study RSPK agents using neuropsychological testing have so far been limited, likely due to the relative rarity of cases involving genuine poltergeist phenomena, and have tended to produce mixed results (see table 2 at the end of the article).

Monitoring of brain wave activity using electroencephalography (EEG) has often revealed no clear signs of abnormality in the agents’ electro-cortical functioning during rest, although a beta wave ‘spike’ pattern resembling an epileptic signature was observed in one instance on a male agent’s EEG record when the boy experienced drowsiness.<sup>[33]</sup> Most of this EEG monitoring took place in the late stages of the poltergeist investigation, however, when the phenomena being reported around the agents had begun to decline; to date, the few attempts made to monitor the agent’s EEG activity during actively-occurring phenomena were unsuccessful, in that no phenomena occurred while the agents were being monitored.<sup>[34]</sup> Additional attempts are necessary in order to better determine whether any kind of EEG correlate is present and can be detected.

## **Tina Resch**

To date, the most extensive effort to examine the neuropsychological conditions of the poltergeist agent was performed with Tina Resch, the girl raised from infancy by her foster parents.<sup>[35]</sup> Tina received three neurological examinations when she was fourteen, all of which seemed to indicate that she faced mild difficulty with coordinated movements of her left hand (like those involved in handwriting) and motion of her body along the left side. Such abnormalities tend to result from an impairment of the motor cortex region in the frontal lobe of brain, and their tendency to appear along Tina’s left side suggested that her right frontal cortex was affected. This appeared consistent with a report that Tina had previously suffered a right frontal impact to her head after she’d been roughly pushed off a school bus. Tina was also known for displaying social and behavioral problems at home and at school, such as hyperactivity, lack of attention and rowdiness, and this is also consistent with an impairment of the frontal region, which has a prime role in regulating these behaviors.<sup>[36]</sup>

Closer examinations of Tina’s brain were made later using EEG and magnetic resonance imaging (MRI).<sup>[37]</sup> An EEG recording of Tina at age 22 revealed a high amount of brain wave slowing, with an excessively high ratio of theta waves relative to beta waves. Such an elevated ratio has often been found to be a notable correlate of attention deficit-hyperactivity disorder,<sup>[38]</sup> a condition that has several symptoms that Tina was known to have exhibited and which may have contributed to her social and behavioral problems.

A brainstem auditory evoked potential (BAEP)<sup>[39]</sup> EEG test was also conducted with Tina in order to monitor her brain’s neuroelectric voltage response to auditory tones in the form of clicking sounds being played in her ears. The results indicated one particularly fast voltage

response present in Tina's left ear that stood out at more than three standard deviations from the normative value, suggesting a potential anomaly in Tina's brainstem. This appeared consistent with a rudimentary theory developed by Roll and neurologist Elson de Montagno, which proposed that neuroelectric discharges traveling through the brainstem to the agent's body (to produce muscle movements) may somehow get 'blocked' and are instead redirected outward into the surrounding environment to produce psychokinetic phenomena in the form of poltergeist disturbances.<sup>[40]</sup> The exact process remains unclear, however.

Initially, there seemed to be a small structural anomaly present in upper right side of Tina's cerebellum (a lower rear brain region with a primary role in maintaining balance) when a structural MRI scan was taken of her brain in 1984. This anomaly was not found again in a follow-up MRI taken several years later, however, and so the possibility that it was a simple imaging artifact cannot be ruled out.

Tina sometimes described experiencing certain subjective sensations which hinted at possible nerve abnormalities, and she often felt them during (or soon after) a poltergeist disturbance had taken place. These included abdominal uneasiness similar to the sensation of stomach 'butterflies', pain in the back of her head and the lower part of her neck, and weak and sore wrists. But it currently remains unclear exactly how these sensations, or any of the other neurological findings obtained with Tina, tie into the poltergeist phenomena occurring around her – or whether they do at all.

## Criticisms

Puerto Rican researchers Alfonso Martínez-Taboas and [Carlos Alvarado](#) have argued that attempts to establish the involvement of psychological issues on the part of poltergeist agents often have not been well-founded on empirical grounds.<sup>[41]</sup> They raise three main criticisms:

- Many psychological evaluations of the agents relied on projective psychological tests, which are of questionable reliability and validity, partly because their analysis and interpretation are largely based on subjective rather than quantitative measures.
- In many cases, the psychologists conducting the evaluations were not kept unaware of the fact that the individuals being evaluated were poltergeist agents. This could have biased the viewpoint, raising an expectation of finding evidence of personal problems.
- It remains unclear that poltergeist disturbances are associated with neuroelectric abnormalities in the agent's brain and nervous system, as relatively few neuropsychological findings clearly support this.

Addressing the first criticism, Roll pointed out that purpose of projective tests was simply to seek insightful psychological guidance on the emotions assumed to be at work within the agent. As he noted:

The projective tests ... and the other psychological and psychiatric studies have been important to us because they have indicated how specific emotions may lead to specific incidents. The tests have not shown, nor could they be expected to show, how family friction or other aspects within the environment may spark movement of objects or explosive sounds. The tests have also not enabled us to distinguish people with [RSPK] from others. The work leads to the expectation that subjects with this type of behavior will show signs of stress but it does not tell us why this should lead to object movement for only a few and not in the many other conflict-ridden homes and businesses.<sup>[42]</sup>

In addition, Rogo stated that with regard to a number of poltergeist cases he had investigated:

... when confronting a poltergeist-ridden family, psychological tests aren't usually needed to see what's going on. The patterns of pathology and repressed hostility are often so incredibly overt that formal psychological testing becomes superfluous. I can remember investigating one case in which I was afraid the central agent was going to physically attack one of the other family members; that's how tense the situation had become. But when I asked this troubled teenager why she was so hostile toward her relative, she totally denied harboring the slightest resentment toward her! It certainly didn't take the [projective tests] to tell me what was happening in this poorly communicating and embittered family.<sup>[43]</sup>

Martínez-Taboas and Alvarado have further suggested that in the future psychological evaluation of RSPK agents should use more quantitative tests.

With regard to the second criticism, some researchers have pointed out that, in at least a small number of cases, psychologists were consulted without being provided with full details of the background. The psychologist in one of Roll's cases had shared the projective test results obtained from a male agent with an independent group of clinical psychologists who were said to have been 'not markedly sympathetic to the PK hypothesis'. The consensus of this clinical group 'was unequivocally that the [test result] was more consistent with the eruption of spontaneous, unconscious, depersonalized violence than with the clever conscious manipulation of hostile actions'.<sup>[44]</sup> A clinical psychologist consulted in a case investigated by psi researcher John Palmer was said to have had 'no special interest in or knowledge about RSPK, and there is no reason to expect that she had any preconceived ideas about the psychodynamics involved in such cases';<sup>[45]</sup> her clinical impressions were that the male agent harbored some repressed aggression. And in a case investigated by Rogo, the consulting psychologist found signs of repressed aggression in three members of a troubled family, without being directly informed about any suspected agent.<sup>[46]</sup>

To address the criticism more objectively, new cases must be investigated in which psychological evaluations of the agents are independently conducted by psychologists uninformed of the background.

The relative absence of neuropsychological findings that clearly support a link with poltergeist phenomena is likely due to the limited opportunities available to closely study the neuropsychology of RSPK agents. Study efforts may be hindered by two other potential factors. First, the relatively short-lived and sporadic nature of poltergeist activity may make neuropsychological monitoring of agents rather challenging, as indicated by the failed attempts previously made to monitor agents' EEGs during moments of activity, mentioned above.

Second, as Roll has pointed out, if the source of any abnormal neuroelectric functioning is deep within the brain, 'it may eschew detection by implanted electrodes. When this is not possible, as it rarely is, you have to rely on overt symptoms, such as muscle contractions and episodes of losing consciousness...'<sup>[47]</sup> Thus, efforts at detection have presently been limited to neuropsychological response tests, from which the neurological functioning of the agent could only be inferred. Hopefully, better opportunities will arise in the future to study the neuropsychology of poltergeist agents using EEG and functional neuroimaging techniques.

Bryan Williams

Table 1. Representative Summary of Psychological Tests and Evaluations Conducted with Poltergeist Agents

Poltergeist Case (Refs.)	Suspected Agent(s)	Psychological Tests/Evaluations	Notable Outcomes/Interpretations
Seaford (Pratt & Roll, 1958; Roll, 1968)	James Herrmann, Jr. (aka., Michael Lessing) – 12-yr.-old male	Wechsler Intelligence Test for Children Rorschach ('Inkblot') Test Thematic Apperception Test (TAT)	I.Q.: normal performance (109); high verbal (127) <b>Projective Tests Indicated Themes of:</b> - passive needs - underlying hostility toward father figures - impersonal violence & destruction - isolation of affect
Newark (Roll, 1969; 1972, Ch. 4)	Ernest Rivers (aka., Arnold Brooks) – 13-yr.-old male	Wechsler Intelligence Test for Children Rorschach ('Inkblot') Test Thematic Apperception Test (TAT) Clinical Interviews Behavioral Observation (via One-Way Mirror)	I.Q.: below-average performance (80); normal verbal (99) <b>Projective Tests Indicated Themes of:</b> - concealed naughtiness  Interviews indicated strained relations between the agent and his grandmother (his primary caregiver). They also hinted at the agent's use of denial & repression as inner defenses, as well as underlying feelings of anger toward his grandmother, which he may have been unable to express or act upon.  Agent was observed in the effort of trying to fake a disturbance by grabbing two rolls of measuring tape, concealing them under his shirt, then throwing them surreptitiously. He later claimed no awareness of the incident, which was further suggested by his passing a polygraph test. One suggestion made on this basis is that the boy may have engaged in such action while in a dissociative state.
Indianapolis (Roll, 1970; 1972, Ch. 5)	Renate Beck (aka., Sonja Bloom) – 32-yr.-old female  Lina Gemmecke (aka., Hanna Gerb) – 61-yr.-old female; Beck's mother	Minnesota Multiphasic Personality Inventory (MMPI) Rorschach ('Inkblot') Test Thematic Apperception Test (TAT) Clinical Interviews	<b>Beck's MMPI Profile Indicated Signs of:</b> - adequate ego strength & resiliency - lack of clear psychopathology - introversion - possible psychosomatic reactions to stress <b>Beck's Projective Tests Indicated Themes of:</b> - unhappiness - heightened anxiety - feelings of inadequacy & rejection - repression & passivity - Impressions of mother as 'possessive, controlling, & dominating' - underlying hostility toward maternal figures  <b>Gemmecke's MMPI Profile Indicated Signs of:</b> - depression - excessive moral virtue in self - lack of an 'id'  Interviews indicated strained relations between mother & daughter, with a high level of interpersonal friction and conflict.
Miami (Roll & Pratt, 1971; Roll, 1972, Ch. 9 & 10)	Julio Vasquez (aka., Victor Gonzales) – 19-yr.-old male	Rorschach ('Inkblot') Test Thematic Apperception Test (TAT)	<b>Projective Tests Indicated Themes of:</b> - unworthiness, guilt, & rejection - passivity and inaction - detachment and unhappiness - dissociative tendencies toward expressing aggression - underlying resentment toward a particular authority figure (owner of place of employment)
Powhatan (Palmer, 1974)	J.E. – 10-yr.-old African American male	Bender Gestalt Test Rorschach ('Inkblot') Test Thematic Apperception Test (TAT) Children's Apperception Test (CAT) Draw-A-Person Test House-Tree-Person Test	<b>Projective Tests Indicated Themes of:</b> - immaturity and underdevelopment - passive & submissive approaches to life situations - denial, avoidance, & withdrawal tendencies to coping with aggression - feelings of rejection & being unwanted
Unpublicized (Pratt & Palmer, 1976)	10-yr.-old Caucasian female 9-yr.-old Caucasian male	Draw-A-Person Test Word Association Test (40-Items)	Long latencies were noted for the female in responding to several stimulus words (particularly ones which alluded to the reported disturbances), and she exhibited several nervous reactions to certain words.  Relatively quick responses were noted with the male, which came in a calm and relaxed manner.
Oakland (Hastings, 1978)	J.O. ('John') – 19-yr. old male	Minnesota Multiphasic Personality Inventory (MMPI) California Personality Inventory (CPI) Thematic Apperception Test (TAT) Adjective Check List	<b>MMPI &amp; CPI Profiles Indicated Signs of:</b> - social introversion - lack of aspiration & ambition - prankster tendencies  Agent was noted to avoid using words referencing strong emotions when describing his responses to the TAT scenario images.  Agent checked words 'clever' & 'daring' on check list, which contrasted with his social appearance to co-workers, but were consistent with his CPI profile of being a prankster.
Woodland Hills (Rogo, 1982; 1986, Ch. 7)	Harry Dell, Mrs. Dell (Harry's wife), Terri Dell – 16-year-old female (Harry's stepdaughter)	Rosenzweig Picture-Frustration Test House-Tree-Person Test Rotter's Incomplete Sentence Blank	<b>Projective Tests Indicated Themes of:</b> - repressed aggression toward others - unhappiness - insecurity - proneness toward unrealistic fantasy  Themes were noted to be present in projective results from all three suspected agents.
Columbus (Carpenter, 1993; Roll & Storey, 2004)	Tina Resch – 14-yr.-old female	Rorschach ('Inkblot') Test Thematic Apperception Test (TAT)	<b>Projective Tests Indicated Themes of:</b> - unhappiness - emotional immaturity - insecurity - perceived neglect & rejection - retreating into fantasy to escape a troubled life - denial and action as a means of coping with conflicts
Rio Tercero (Parra, 2004)	Andrés Vernier – 18-yr.-old male	Psychiatric Evaluation House-Tree-Person Test Draw Your Family Test Eysenck's Personality Questionnaire – Revised (EPQ-R) Dissociative Experience Scale – Revised (DES-R) Schizotypal Personality Questionnaire (SPQ)	Evaluation indicated that agent tends to display hostility and aggression directed primarily towards family members, and seldom towards strangers.  <b>Tests Indicated Themes of:</b> - emotional instability - irritability - impulsiveness - feelings of inadequacy in personal environment

## Literature

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Table 2. Summary of Neuropsychological Tests and Evaluations Conducted with Poltergeist Agents

Poltergeist Case (Refs.)	Suspected Agent(s)	Neuropsychological Tests/Evaluations	Outcomes/Interpretations
Newark (Roll, 1969; 1972, Ch. 4)	Ernest Rivers (aka., Arnold Brooks) – 13-yr.-old male	Resting EEG	EEG record displayed an intermittent 10 – 10.5 Hz (alpha) rhythm in the occipital regions, which extended to the parietal and posterior temporal regions. Theta rhythms (4 – 7 Hz) were irregularly observed in the frontal and anterior temporal regions.  In one instance, a transient burst of 14 Hz (beta) ‘spikes’ was observed when the agent reported feeling drowsy.
Miami (Roll & Pratt, 1971; Roll, 1972, Ch. 9 & 10)	Julio Vasquez (aka., Victor Gonzales) – 19-yr.-old male	Resting EEG	EEG record displayed an intermittent 10 Hz (alpha) rhythm in the posterior brain regions, along with some beta (13 – 30 Hz) activity. Irregular theta (4 – 7 Hz) patterns were observed in the frontal and pre-central regions, which became more defined with drowsiness. No clear abnormalities were indicated.
Powhatan (Palmer, 1974)	J.E. – 10-yr.-old African American male	Resting EEG Neurological Examination (including second EEG)	High amplitude 8 Hz (alpha) activity observed in the occipital regions (150 – 200 microvolts) at rest. Occasional 6.5 – 7 Hz (theta) activity also observed. No clear signs of abnormality found.  Neurological results also indicated no signs of abnormality.
Unpublicized (Pratt & Palmer, 1976)	10-yr.-old Caucasian female 9-yr.-old Caucasian male	EEG using portable telemetry-based unit	EEG activity of each agent was alternately recorded during their normal waking state to see if any abnormalities might be observable during a poltergeist event: Male was recorded for 60 min., female for 30 min. No events took place while agents were being monitored.
New Bedford (Mathews & Solfvin, 1977)	Michael – 9-yr.-old male Patrick – 7-yr.-old male	EEG using portable telemetry-based unit Clinical EEG Examination	EEG activity of each agent was alternately recorded for a brief time during their normal waking state to see if any abnormalities might be observable during a poltergeist event; no events took place while agents were being monitored.  Clinical EEGs subsequently indicated no abnormalities.
Freiburg-Oberau (Gruber, 1980)	Thomas – 14-yr.-old male	Neurological Examination Resting EEG	Neurological results indicated no signs of pathology.  EEG record displayed a well-developed alpha (8 – 12 Hz) rhythm at rest. Only slight arrhythmic changes observed in the occipital regions. No changes observed during hyperventilation, apart from occasional generalized paroxysmal arrhythmic activity.
Columbus (Baumann, 1995; Roll & Storey, 2004)	Tina Resch – 14-yr.-old female	Neurological Examinations (3) Resting EEG Brainstem Auditory Evoked Potential (BAEP) test Structural MRI (2)	Neurological results were indicative of mild difficulties with coordinated movement and motion along the left side of the agent’s body. These may have been related to a head impact to the right frontal area that the agent reportedly sustained at 12 years of age, when she fell after being roughly pushed off of a school bus.  EEG record (taken when the agent was 22 years of age) displayed a high amount of brain wave slowing, with an elevated theta/beta ratio (often found to be correlated with attention deficit-hyperactivity disorder – ADHD; Demos, 2005, pp. 113 - 114; Thompson & Thompson, 2009).  BAEP test results indicated a significantly increased response in the agent’s left ear for peak IV of the AEP waveform that was more than 3 sigma from the normative value – suggests a brainstem anomaly in the region around the pons.  MRI initially revealed a small structural anomaly in the upper right side of the agent’s cerebellum. This anomaly was not seen in a follow-up MRI, however, suggesting a possible imaging artifact.
Rio Tercero (Parra, 2004)	Andrés Vernier – 18-yr.-old male	Psychiatric Evaluation Neuropsychological Tests	Neuropsychological tests indicated possible signs of neurological disorder (mainly focused in the frontal regions). Possible signs of (light-sensitive) epilepsy were also indicated in an early diagnostic evaluation.



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## Endnotes

### Footnotes

1. ^ Davidson & Duffin (2012); Puhle (1999).
2. ^ Thurston (1954), 39-50.
3. ^ Barrett (1911), 410.
4. ^ Roll (1977).
5. ^ Huesmann & Schriever (1989).
6. ^ Pratt & Roll (1958).
7. ^ Roll (1977), 403.
8. ^ Roll (1972), 175.
9. ^ Rogo (1974); (1982a).
10. ^ Rogo (1974), 444.
11. ^ Hastings (1978), 255.
12. ^ Roll, (1972), 171.
13. ^ Rogo (1986), 62.
14. ^ Roll (1969); Roll (1972), chapter 4.
15. ^ Pratt & Palmer (1976).
16. ^ Palmer (1974).
17. ^ Pratt (1978).
18. ^ Roll & Storey (2004).
19. ^ Roll (1977), 402.
20. ^ Huesmann & Schriever (1989).
21. ^ Carvalho (1992), 308.
22. ^ The percentage cited in Carvalho's survey may have to taken with some caution due to the relative small number of cases contained in the Brazilian collection (which could potentially lead to inflated values), as well as some potential issues with the way in which certain cases in the Brazilian collection were selected; see Machado & Zangari (2000).
23. ^ In Roll (1972), xiii.
24. ^ Roll (2007), 128.
25. ^ Roll & Storey (2004).
26. ^ Roll (1984), 118.
27. ^ Roll (1977), 400.
28. ^ Roll (1970).

29. ^ Solfvin & Roll (1976).
30. ^ Roll & Tringale (1982).
31. ^ Owen (1978), 370.
32. ^ Owen (1978), 372.
33. ^ Roll (1969); Roll (1972), 176.
34. ^ Mathews & Solfvin (1977); Pratt & Palmer (1976).
35. ^ Roll & Storey (2004).
36. ^ Eslinger (2008).
37. ^ Baumann (1995).
38. ^ Demos (2005) 113-14; Thompson & Thompson, 2009.
39. ^ Joos et al (2014), Sect. 2; Stern et al. (2001), 91-92.
40. ^ Montagno & Roll (1983).
41. ^ Martinez-Taboas (1984); Martinez-Taboas & Alvarado (1981).
42. ^ Roll (2007), 128.
43. ^ Rogo (1986), 153.
44. ^ Roll (1968), 303.
45. ^ Palmer (1974), 28.
46. ^ Rogo (1982a, 1982b).
47. ^ Roll (2007), 128.