Published in final edited form as:

J Dev Phys Disabil. 2013 December 1; 25(6): . doi:10.1007/s10882-013-9335-3.

Habit Reversal Therapy for Body-Focused Repetitive Behaviors in Williams Syndrome: A Case Study

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Abstract

Williams syndrome (WS) is genetic neurodevelopmental disorder with a well-characterized cognitive and behavioral phenotype. Research has consistently demonstrated high rates of psychopathology in this population; however, little research has examined the use of empirically-supported psychosocial interventions in those with WS. The current case study reports on the use of Habit Reversal Therapy (HRT) to treat multiple body-focused repetitive behaviors in a child with WS. Although HRT is a well-established cognitive-behavioral intervention for body-focused repetitive behaviors, it has been infrequently used in populations with developmental disabilities. An etiologically-informed approach was used to adapt HRT to fit the known behavioral and cognitive phenotype of WS. Results suggest that HRT may be beneficial for this population. Modified treatment elements are described and future research areas highlighted.

Keywords

Williams syndrome; Body-focused repetitive behaviors; Habit reversal therapy; Developmental disability

Williams Syndrome

Williams syndrome (WS) is a rare neurodevelopmental disorder caused by a sporadic hemizygous deletion of at least 19 genes on chromosome 7q11.23 (Hillier et al. 2003). Prevalence of WS is estimated to be approximately 1 in 7,500 live births (Stromme et al. 2002). WS has a well-defined cognitive phenotype characterized by relative strengths in concrete language, nonverbal reasoning, and verbal short term memory and significant weaknesses in visuospatial construction and fine motor skills (Mervis and John 2010). In terms of personality, those with WS are typically described as gregarious, empathetic, and highly interested in social interactions (Klein-Tasman and Mervis 2003).

Research aiming to characterize the behavioral phenotype of WS has consistently found high rates of psychopathology compared to both typically developing and intellectually impaired groups (e.g., Perez-Garcia et al. 2010). Specifically, research suggests an elevated incidence of attention deficit/hyperactivity disorder (ADHD; Leyfer et al. 2006) and anxiety

disorders, particularly Generalized Anxiety Disorder and Specific Phobia (Cherniske et al. 2004; Dykens 2003; Leyfer et al. 2006; Woodruff-Borden et al. 2010). Those with WS have also demonstrated an oversensitivity to sound (Gallo et al. 2008), a tendency toward obsessiveness (Dykens 2003; Klein-Tasman and Mervis 2003), and social deficits, including difficulties with social skills, social reciprocity, and social understanding (Klein-Tasman et al. 2011). Evidence suggests that social difficulties in WS may be impacted by heightened sensitivity to emotional reactions of others (Fidler et al. 2007) and/or deficits in pragmatic language (Laws and Bishop 2004) and perspective taking (Porter et al. 2008).

Despite the preponderance of evidence pointing to significant mental health concerns in those with WS, very few studies have examined the efficacy of psychosocial interventions in this population, largely due to the rarity of WS. However, results from case reports and single-subject outcome studies suggest that behavioral and cognitive-behavioral strategies may be promising in the treatment of psychopathology in WS.

Two studies by O'Reilly et al. (2000) and O'Reilly and Lancioni (2001) suggest that behavioral techniques often used in reducing undesirable behavior and increasing adaptive behavior (e.g., differential attention) can be effective for children with WS. More recently, case studies have reported on the use of established, empirically-supported cognitive-behavioral therapy for treatment of obsessive-compulsive behavior (Klein-Tasman and Albano 2007) and anxiety (Phillips and Klein-Tasman 2009). In both of these studies, an etiologically-informed approach was used to adapt manualized interventions to fit the known behavioral and cognitive phenotype of WS. For example, techniques involving abstract verbal reasoning (e.g., cognitive restructuring) were simplified or de-emphasized in favor of behavioral strategies (e.g., exposures, role-playing), parental involvement was increased, modules were added to address social skills deficits, and treatment course was lengthened to reinforce concepts and promote retention.

Given the rarity of WS, researchers have argued that it is critical for practitioners to continue to report on the adaptation of empirically-supported interventions and outcomes in WS so that practice in this area can be more empirically informed (Klein-Tasman and Albano 2007). In line with this call to action, the current study reports on the use of Habit Reversal Therapy (HRT; Azrin and Nunn 1973) and function based interventions to treat multiple body-focused repetitive behaviors (BFRBs) in a child with WS. To date, there have not been reports of using HRT for children with WS.

Habit Reversal Therapy

HRT is a cognitive-behavioral intervention that is commonly used to treat disorders involving repetitive, body-focused, and/or habitual behaviors associated with distress or functional impairment, such as tics, trichotillomania, stuttering, and body-focused repetitive behaviors (Azrin and Nunn 1973). The term "body-focused repetitive behaviors" (BFRBs) refers to behaviors directed toward one's own body that often focus on removing parts of the body; for example, nail biting, skin picking/biting/scratching, nose picking, and chewing on the lips or mouth (Bohne et al. 2002; Teng et al. 2002). Although prevalence rates of BFRBs are unclear, research on skin picking suggests that it is likely higher in samples of individuals with developmental disabilities (Didden et al. 2007) than in individuals without disabilities.

HRT involves several core treatment components (Azrin and Nunn 1973; Woods and Twohig 2001). *Awareness training* is designed to improve the client's ability to discriminate occurrences of the target behavior and its antecedents. Procedures used to enhance awareness include 1) creation of a response description that identifies the topography of the

target behavior, its antecedents (“warning signs”) and consequences, and high-risk situations for behavior occurrence and 2) response detection practice, in which the client learns to identify actual occurrences of the behavior in real time. Based on information gathered during awareness training, function-based interventions are also implemented to decrease the likelihood of high-risk situations. *Competing response training* is designed to disrupt performance of the target behavior by providing the client with an incompatible behavior to use contingent on target behavior occurrences or “warning signs.” Finally, *social support* and *behavioral reward systems* are used to enhance treatment compliance. Social support training involves identifying and training a person (usually a parent) who can prompt competing response use or praise successful implementation of treatment techniques. Reward systems are often used in children to encourage homework completion and independent use of the competing response.

In terms of empirical support, HRT is considered a well-established treatment for BFRBs (Bate et al. 2011). A meta-analysis based on 18 HRT efficacy trials found an overall large effect size ($d=0.80$) from pre-treatment to final post-treatment assessment as compared to control conditions; effect sizes for BFRB specific treatments ranged from $d=0.59$ for oral habits to $d=1.06$ for nail biting (Bate et al. 2011).

Despite its promise for treating BFRBs, HRT has been infrequently used in populations with developmental or intellectual disabilities. On one hand, this is understandable due to concerns about the level of cognitive ability required to fully participate and benefit from cognitive-behavioral treatments (Lang et al. 2010). On the other hand, some evidence suggests that HRT may be beneficial for those with mild to moderate intellectual delay with some modifications to the standard treatment protocol. Using a multiple baseline across subjects design, Long et al. (1999) provided HRT to four adults with mild intellectual disability and oral-digital habits, such as fingernail biting. HRT alone resulted in a significant habit reduction in only one participant, but the addition of prompting and reinforcement procedures resulted in near-zero levels of the behavior in all participants. Another reported case of HRT in an adult with moderate intellectual delay and chronic hair pulling found similar results: HRT alone produced slight change but led to near-zero levels of hair pulling with the addition of an awareness enhancement device (Rapp et al. 1998). Therefore, existing research suggests that HRT coupled with function-based behavioral strategies may enhance the efficacy of HRT in those with intellectual disabilities.

Current Case Study

The current case study describes the use of HRT to treat multiple BFRBs in a child with WS. Sam was a 7-year-old Caucasian male who lived with both biological parents and a younger sibling. Sam was diagnosed with WS at 15 months of age. He was enrolled in a regular first grade classroom at a public school and had support from a special education teacher. He presented for treatment to address several BFRBs associated with self-injury (e.g., bleeding, scabbing, sores), impairment in school, and disruption of social and home activities. Consent to participate in treatment included written consent to use information gathered for research purposes using a form approved by the Institutional Review Board at the University of Wisconsin-Milwaukee.

At the start of treatment, target BFRBs were identified, defined, and ranked in order of treatment priority as follows:

Sniffing: hard sniffing/blowing air out of the nose, at times until nose bled.

Skin picking: picking hands and forearms until there was bleeding or picking at existing scabs on hands, arms, and legs.

Nose picking: sticking pinky finger into nostril until nose bled, almost always in conjunction with sniffing.

Lip biting: chewing the inside or front corner of the lower lip or chewing the tongue until there was a sore.

Assessment

A psychological assessment was conducted prior to the start of treatment and included a parent interview, administration of the Anxiety Disorders Interview Schedule for DSM-IV Parent Interview Schedule (Silverman and Albano 1996), and the Behavior Assessment System for Children-Parent Rating Scales (Reynolds and Kamphaus 1992), cognitive assessment using the Differential Ability Scales –Second Edition – School Age Form (Elliott 2007), and academic assessment using the Wechsler Individual Achievement Test (Wechsler 2005).

Sam's overall cognitive abilities fell in the low average range (GCA=89). His verbal (SS=107) and nonverbal abilities (SS=103) were in the average range. As is common for children with WS, his spatial abilities were considerably weaker, falling in the mildly impaired range (SS=63), reflecting the relative weakness in visuospatial construction that is common for people with WS. Sam's abilities fell in the average range for reading skills (Reading Composite Standard Score [SS]=102), the average range for writing (Written Language Composite SS=88), and the mildly impaired range for mathematics skills (SS=65).

Psychosocial and diagnostic assessment was consistent with Attention Deficit Hyperactivity Disorder – Predominantly Inattentive Type, Anxiety Disorder NOS, Specific Phobia, and Stereotypic Movement Disorder with Self-Injurious Behavior. In particular, Sam showed considerable anticipatory anxiety.

Description of Treatment

Treatment followed an established HRT manual for oral-digital habits (Woods and Twohig 2001). Treatment specifically targeted BFRBs only (not other diagnoses) given that these behaviors were associated with the most significant functional impairment. Treatment consisted of eight sessions of HRT, which Sam and his mother both attended. Sessions were held weekly, with the exception of a 2 week gap between sessions 7 and 8. A booster session was held 2 months after session 8. The specific structure of each therapy session is outlined in Table 1. Adaptations to the treatment protocol were made throughout the course of treatment in an effort to better fit Sam's needs and are described below. Adaptations were always intended to remain consistent with the theoretical (i.e., behavioral) and technical (i.e., emphasizing particular protocol components) aspects of the manual.

Previous case reports suggest that children with WS may have difficulty comprehending therapy material that is abstract or conceptual (Phillips and Klein-Tasman 2009), so emphasis was placed on using straightforward behavioral strategies. For example, care was taken to describe the treatment rationale and to teach Sam treatment strategies using concrete explanations with demonstrations wherever possible (e.g., after first defining the competing response, the therapist acted out using a competing response). When treatment strategies were used to address emotions associated with higher risk for BFRBs, cognitive techniques were avoided in favor of behavioral techniques, such as using simplified relaxation exercises to reduce anxiety rather than cognitive restructuring.

Sam demonstrated difficulty implementing treatment skills independently. In particular, he had difficulty recognizing BFRBs and BFRB "warning signs" during formal awareness

training and as they occurred naturally, and he had trouble using competing responses without prompting. Difficulty with self-awareness and skill generalization has been described in cases of WS (Phillips and Klein-Tasman 2009); in Sam's case, it is likely that other factors contributed to these difficulties as well, such as his young age and ADHD diagnosis. To address these difficulties, particular components of HRT were emphasized by spending more session time on these topics and developing more detailed plans for their implementation. First, increased focus was placed on creating comprehensive function-based interventions and stimulus control procedures to reduce the likelihood of BFRB occurrences in all high-risk situations (Table 2). For example, given that multiple BFRBs occurred in the bathroom, a timer was used to limit time spent in the bathroom both at home and at school, and reminders to use competing responses were provided by parents/teacher before entering the bathroom. As another example, since Sam reported enjoying the color of blood, daily play with red paint was assigned to provide an alternative way of accessing the reinforcing properties of blood. Care was taken to design interventions that would encompass Sam's daily routine, such as including interventions for home, school, public places, and car rides.

Second, social support procedures were expanded to broaden the role of parent and teacher involvement. Parent procedures were practiced regularly in-session, and detailed procedures for how to use HRT strategies in school were written for Sam's teacher, such as when and how to prompt or reward competing response use and instructions for implementing function-based interventions (e.g., procedure for monitoring Sam's time in the bathroom). Third, the reward system was modified throughout treatment by changing the criteria for reward delivery (i.e., shaping procedure). Initially, approximations of independent competing response use were rewarded (e.g., comply after one prompt). Once Sam was using competing responses more regularly, criteria were changed to only reward independent implementation. In addition, over time the reward schedule was thinned, such that Sam had to earn more points to "cash in" on preferred items or activities. A "spot check" was also used as a proxy for a variable rate schedule (which is more resistant to extinction). Finally, given that Sam seemed to be more compliant in the days immediately following a session, "pretend sessions" at home were used to promote both compliance and retention.

Competing response procedures were also modified. Given Sam's difficulty maintaining the competing response for the recommended 1 min (Woods and Twohig 2001), the competing response duration was shortened to 10 s. Sam was encouraged to actively monitor competing response duration by counting to 10 aloud softly and quietly. This shortened duration seemed to be brief enough to enhance compliance yet long enough to successfully disrupt sustained bouts of BFRBs. When possible, efforts were made to "re-use" existing competing responses (e.g., using "folded hands" for both skin and nose picking) to enhance retention.

Whenever possible, HRT skills were introduced and practiced in game-like formats. For example, awareness training was introduced as a game in which Sam had to try to "catch" the therapist engaging in a simulated BFRB. To practice all competing responses in a later session, Sam watched a movie and was given "points" by the therapist for each 10 s without a BFRB. These strategies seemed to be helpful in light of Sam's attention difficulties and young age.

Treatment Outcome

Two versions of parent monitoring forms were used across the course of treatment. Version 1 was completed from baseline through session 3 and included the following data: 1) presence/absence of each BFRB daily (i.e., parent made a check mark if the BFRB happened

at least once that day) and 2) descriptive notes about observed BFRB antecedents and consequences. Version 2 was used the last month of treatment (sessions 4–8) and was a frequency count of all BFRBs observed daily at home by the parent. The Version 2 form was repeated for 1 week prior to the booster session (“2-month follow-up”). Due to the close relationship between sniffing and nose picking, as nose picking almost always occurred immediately after sniffing, these BFRBs were collapsed into one category for ease of monitoring.

Results are presented graphically in Figs. 1 and 2. As both versions included tracking of daily BFRB presence/absence, Fig. 1 displays the percentage of days that each BFRB occurred in a particular week. (Note that each “week” reflects the week for which monitoring was completed, such that 0 = pre-treatment week, 1 = week after session 1, 2 = week after session 2, etc.) To provide a sense of the frequency (rather than presence/absence) as treatment progressed, Fig. 2 displays the frequency of BFRBs (as recorded on the Version 2 form) for each day of the last month of treatment (sessions 4–8) and for the 2-month follow-up.

Visual inspection of Fig. 1 indicated overall improvement in the number of days in which BFRBs occurred following HRT implementation for each target behavior. In other words, Sam had increasingly more days without any reported BFRBs. This was particularly true for lip biting, which fell to near-zero levels by the end of treatment and did not occur at all during the follow-up period. Skin picking also significantly declined during the acute treatment phase. At follow-up, skin picking increased but did not return to levels observed in week 1, suggesting partial relapse. Figure 1 suggests an overall decrease for sniffing/nose picking, albeit less markedly than the other BFRBs. Figure 2 suggests that on days that lip biting and skin picking occurred (during the last half of treatment and at follow-up), these BFRBs tended to occur at very low frequencies. Sniffing/nose picking was more variable, on most days occurring 2–5 times. It is worth noting that Sam started the new school year the week prior to the follow-up monitoring period; therefore, it is possible that observed increases were associated with this event. Following the booster session, the parent anecdotally reported decreased BFRB frequencies.

Although not captured by either graph, it is worth noting that global decreases in the frequency of all BFRBs were supported by parent report and clinical observation (including observed in-session behaviors and physical markers of progress, such as healed scabs and absence of new wounds). Parent report also suggested that BFRBs that did occur near the end of treatment were of shorter duration, more easily disrupted, less interfering, and less intense (i.e., less likely to cause physical damage or bleeding), suggesting an overall lower severity of BFRBs.

Discussion

The current case study suggests that HRT, an empirically-supported intervention, may have some benefit for children with WS and BFRBs. HRT consists of several core treatment components, including awareness training, function-based interventions, competing response training, social support, and reward systems. In the current case study, improvements in BFRB frequency, severity, intensity, and interference were reported, although treatment did seem to have a greater impact on particular BFRBs (i.e., skin picking and lip biting). HRT may be a type of cognitive-behavioral therapy that is particularly well-suited to this population given its straightforward, concrete principles and procedures. However, it is likely that maximal benefit from HRT will necessitate some protocol adaptations to accommodate the ability profiles of children with WS. In the current case, modifications included increased focus on function-based interventions, a reduction of the

competing response duration, and broadened scope of the parent's social support role. It is important to note that all adaptations were consistent with the overall HRT framework. Therefore, flexible treatment delivery, in which adaptations targeting specific client needs are made within the boundaries of treatment fidelity (Kendall and Chu 2000), may be particularly critical when conducting HRT with individuals with WS, other developmental delays, or rare disorders with unique cognitive or ability profiles.

It is interesting to note that particular clinical aspects of Sam's case may have been related to the cognitive profile that is characteristic of WS. Over the course of treatment, functional assessments and parent/teacher observations revealed that BFRBs occurred more frequently during tasks that required visuospatial abilities, such as drawing and writing. Given Sam's known weakness in spatial abilities (as is common in WS), we were more readily able to conceptualize BFRBs during these tasks as avoidance or escape behaviors and develop appropriate intervention strategies. Therefore, in this specific case, knowledge of individual intellectual functioning informed treatment delivery and modification. When applied in a broader sense, this experience suggests that future work on the adaptation of empirically-supported interventions in developmental disabilities may be enhanced by tailoring modifications to specific intellectual and/or ability profiles. It is also notable that while Sam has the characteristic cognitive profile seen in children with WS, his overall level of intellectual functioning is in the solidly average range, such that additional modifications may be necessary for children with WS with intellectual disabilities.

Although BFRBs in this case did globally decline, BFRBs did not entirely diminish. Sniffing and nose picking continued at levels that were still of clinical concern. This suggests that additional modification of the HRT protocol may have been needed. However, it is also possible that particular patient characteristics influenced outcome, such as age (e.g., Sam was only 7 years old) and comorbidity status (e.g., Sam had diagnoses of ADHD and Anxiety NOS). Further research is needed to examine HRT efficacy and moderators of outcome in children with developmental disabilities. Although the current case study and other preliminary research suggest that HRT modification and augmentation may be beneficial, perhaps even necessary, in individuals with disabilities (Long et al. 1999), further research is needed to systematically test the efficacy of these changes. In rare conditions, such as WS, the feasibility of large-scale efficacy trials to address these issues is questionable. As such, it will continue to be imperative for clinicians and researchers to continue to report on the use of HRT using descriptive case studies or single-subject experimental case designs.

Limitations of the current study are worth noting. First, the case study was non-experimental in nature, thereby limiting any conclusions that can be drawn about the efficacy of HRT as a complete package or of particular adaptations made during the course of treatment. The extent to which extraneous factors may have contributed to observed improvements is unclear. For example, Sam finished school for the summer in the week following session 2, which did coincide with some BFRB reduction. Second, we relied on parent report and clinical observation to draw conclusions about treatment outcome, which may have been influenced by reporting biases. Reliability of parent frequency counts was not formally assessed. In the future, it may be beneficial to also include objective measures of BFRB change, such as measuring physical markers of damage. Finally, parent compliance and involvement in treatment was notably strong in this case. Given the extent to which we relied on the parent to implement treatment procedures at home, it is unclear if similar outcomes would generalize to families in which parents are less compliant, motivated, or capable of implementing procedures consistently and accurately.

The current study adds to the small but growing body of literature on the use of empirically-supported treatments in children with WS. Consistent with this literature (e.g., Phillips and Klein-Tasman 2009), we found it helpful to use an etiologically-based approach to guide decision making during treatment: treatment modifications were made by considering how to best match the unique behavioral, cognitive and psychiatric phenotype of WS with the core principles and procedures of HRT. The current case report provides additional support for the use of this treatment adaptation approach for those with WS and suggests initial promise for the use of HRT in this population. Given that HRT has demonstrated efficacy for several psychiatric disorders, many of which are common in those with developmental disabilities, additional research aimed at optimizing HRT outcome for differing intellectual and ability profiles may help bring this empirically-supported therapy to more individuals in need of effective intervention.

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Fig. 1.

Parent-reported percent of days in which BFRBs occurred by treatment week and at 2-month follow-up. Note: Sniffing and nose picking were monitored simultaneously because sniffing almost always preceded nose picking. A competing response for sniffing was introduced at session 2 and a separate competing response for nose picking was introduced at session 4. *HRT* Habit Reversal Therapy, *BFRB* body-focused repetitive behavior

Fig. 2. Parent-reported frequency of BFRBs each day for the last month of treatment (sessions 4–8) and a week of follow-up prior to a 2-month booster session

Table 1

Structure of treatment and adaptations to treatment protocol

Session	Topic	Observations	Adaptations
1	Introduction to treatment Functional assessment of all BFRBs Functional assessment of sniffing Awareness training for sniffing Creation of behavioral reward system		Simplified treatment rationale Greater reliance on parent and teacher observations of BFRBs in functional assessment
2	Functional assessment of sniffing Function-based interventions for sniffing CR training for sniffing	Successful identification of therapist and parent-simulated sniffing but difficulty identifying own behavior	Increased parental and teacher presence during high-risk settings to prompt CR more frequently
3	Functional assessment of skin picking Function-based interventions for skin picking Awareness training for skin picking CR training for skin picking	Successful use of CR in presence of therapist/parent Continued difficulty implementing CR independently Could not maintain CR for 1 min	Increased focus on function-based interventions to reduce likelihood of target behaviors Shortened duration of CR to 10 s (i.e., asked to count to 10 slowly) Modified reward system to reinforce use of CR independently or with only
4	Functional assessment of nose picking Function-based interventions for nose picking Awareness training for nose picking CR training for nose picking	Modified CR associated with increased compliance	1 prompt
5	Functional assessment of lip biting Function-based interventions for lip biting Awareness training for lip biting CR training for lip biting	Notable increases in use of CR with minimal prompting and associated reduction in BFRB frequencies Better compliance in days immediately following session	Parent instructed to have a “pretend session” mid-week to practice awareness and CR
6	Addition and modification of function-based interventions In-session practice of all CRs	“Pretend session” reported to be helpful promoting retention and compliance Some difficulty remaining attentive and engaged during CR practice	Addition of function-based interventions to specific high-risk settings in which BFRBs continued and CR use is hard to prompt (e.g., put fidget toys in the car) Present CR practice in a “game” format to make more fun and engaging
7	Stimulus control procedures for continued high-risk settings Relaxation training In-session review of all CRs	Reported improvements in awareness Independent use of CR reported for the first time CR noted to increasingly disrupt sustained bouts of BFRBs	Parent guided practice of CRs prior to entering high-risk situations Parent asked to conduct random “spot checks” during high-risk times (e.g., when alone) and reward Sam if not engaging in any BFRBs Emphasize CR practice in high-risk settings (e.g., short “practice car rides”)
8	Review of treatment techniques Relapse prevention	Parent reported success with spot check system	Recommended continued use of structured treatment elements, such as spot check system, reward system, and “practice sessions”
Booster Session	Review of treatment techniques Relapse prevention Modification of function-based interventions	Sam recently started the new school year and some BFRBs returned	Provided written recommendations for new teacher and offered consultation as needed

CR competing response

Table 2

Functional assessment results and function-based interventions used in treatment

BFRB	Functional assessment		Function-based interventions	Competing response
	Antecedents	Consequences		
Sniffing	Emotions/Sensations: Bored Anxious “Itch” or “tickle” in nose Settings/Situations: Schoolwork Writing tasks Bathroom Waiting for bathroom Bedtime Watching TV Using tissues	Itch stops Enjoys looking at blood and mucus (likes color) Eats mucus Teacher or parent asks to stop Sibling tells on him	Poster listing activities to do when bored Relaxation training Limit time in bathroom Limit access to tissues Blow nose only once per tissue Daily play with red paint Block attempts to avoid/escape school tasks, reinforce compliance	“Quiet breathing”: inhale through nose and exhale through the mouth
Skin picking	Emotions/Sensations: Bored Anticipatory anxiety Itch Scratching/touching skin or scabs Settings/Situations: Writing tasks Bathroom Waiting Watching TV Alone Riding in car Time out	Enjoys looking at blood Pleasurable sensation on skin Itch stops	Poster listing activities to do when bored Cover scabs Relaxation training Limit time in bathroom Daily play with red paint Fidget toys placed in high-risk settings Chores during time out Block attempts to avoid/escape school tasks, reinforce compliance	“Folded hands”: interlace fingers and place hands on lap
Nose picking	Emotions/Sensations: Bored Tired Settings/Situations: Usually occurs after sniffing starts Writing tasks Bathroom Watching TV	Enjoys looking at blood Asks others if they see blood	Limit access to tissues Blow nose only once per tissue Limit time in bathroom Daily play with red paint Ignore questions about blood; redirect to task	“Folded hands”
Lip biting	Settings/Situations: Time out Looking in the mirror		Chores during time out Cover mirror in bedroom Limit bathroom time Chew gum during high-risk times	Hold teeth together with lips slightly apart