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Commentary

Brief group therapy for chronic pain in adolescents

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In the treatment of chronic pain, psychological therapies are often recommended to increase use of non-pharmacological pain interventions and to treat underlying/comorbid emotional difficulties (Palermo et al., 2010; Fisher et al., 2014). While individual interventions are typically utilized, group-based approaches may be particularly compelling for adolescents. Prior groups have frequently used cognitive-behavioral approaches to target single-system pain disorders (e.g. headache; Larsson et al., 2005). Some have also incorporated parents (Coakley & Barber, 2012). Because adolescents with chronic conditions (e.g. cancer, sickle cell disease) are in the midst of developing increasing independence with regard to self-management of their illnesses and symptoms (Jensen et al., 2003), they may benefit from group-based approaches that capitalize on this growing independence.

Most pain patients at our institution are familiar with cognitive behavioral therapy (CBT) because it is a key component of our specialized Pain Service. In contrast, the role of operant learning (i.e. the systematic shaping and reinforcing of behaviors through rewards and consequences) is not typically emphasized. The operant model was thought to be an appropriate framework for use with our adolescent patients who, again, are starting to develop independence in managing their illnesses (Jensen et al., 2003; Flor & Turk, 2011). As such, a brief operant group intervention for adolescents with chronic pain was created and offered for clinical purposes (Table 1). Of note, a group based on the operant model of pain was not thought to be superior to, or of potentially greater utility than, CBT pain interventions. Rather, it was thought that an operant-learning group intervention might be an appropriate supplement to the individual CBT already offered.

Operant model of pain

The operant model of pain focuses on pain behaviors as a major contributor to negative sequelae (Gatzounis et al., 2012). Specifically, this model highlights the importance of learning in the development and maintenance of chronic pain. Pain behaviors (e.g. posturing, grimacing, moaning, removal from regular activities) initially serve an adaptive function in acute pain situations; however, when these behaviors persist for long periods of time they may actually increase risk of disability (Karsdorp & Vlaeyen, 2009). Pain behaviors, as learned behaviors, are subject to environmental contingencies, and therefore are subject to the law of effect. In other words, when pain behaviors are followed by positive outcomes or the removal of unpleasant outcomes they are more likely to persist (Gatzounis et al., 2012). This is problematic because continued demonstration of pain behaviors has been associated with physical deconditioning, depressive symptoms, anxiety, and poorer quality of life (e.g. Spinhoven et al., 2004; Karsdorp & Vlaeyen, 2009).

Operant pain interventions focus on decreasing pain behaviors by providing encouragement and reinforcement for healthy or well behaviors and eliminating reinforcement of pain behaviors (Dahlquist & Nagel, 2009; Flor & Turk, 2011).

Table 1

Session content - adapted from an approach designed by Flor and Turk (2011)

Week 1

- Review purpose of the group and operant pain model
- Group expectations: confidentiality, attendance, homework completion
- Brainstorm common pain and well-behaviors
    - Discussion: How do families positively or negatively influence pain?
- Homework:
    - Identify individual pain and well-behaviors
    - Teach what I learned to a family member

Week 2

- Physical Therapy presentation
    - Role of physical activity and physical therapy in coping with chronic pain
    - Demonstration of simple stretch
- Discussion regarding individual pain and well behaviors; emphasize focus on well behaviors
    - Examples of engagement in well behaviors, even while in pain
    - Common well-behaviors (e.g. increased talking, increased laughing, increased prosocial interactions)
- Group decision to ban the word *pain* in session to help increase focus on well-behaviors
- Homework:
    - Log active well-behaviors with instruction to participate in at least one each day

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Week 3

- Continued identification of and participation in well-behaviors
- Discussion regarding potential benefit of including a social component
- Token economy
    - Group members monitored use of well-behaviors during session (e.g. talking, laughing)
    - If a group member observed a well-behavior, she provided the other member with a plastic chip
    - At the end of session, discussed observed behaviors and ways to increase well-behaviors in session
- Homework:
    - Continued participation in and monitoring of well-behaviors
    - Include a friend or family member in well-behaviors

Week 4

- Review of topics learned
- Discussion of how to maintain progress when school resumed
    - Individualized well-behavior plans
    - Problem-solve potential barriers

Targeted well-behaviors include smiling, engaging with friends and maintaining activity expectations (e.g. chores, school attendance), while pain behaviors such as moaning or grimacing are ignored. In a group format, participants are encouraged to reinforce healthy behaviors and help extinguish pain behaviors in others during sessions (Flor & Turk, 2011). An adolescent-focused operant pain intervention provides explicit teaching about learned pain behaviors and how they may have been accidentally reinforced, and illustrates the impact of these behaviors on family and peer interactions. Adolescents can then be directly taught about the possible inadvertent impact of persistent pain behaviors on school functioning, leisure time, and other everyday activities. For example, patients could be taught how caregivers may have permitted activity restrictions (e.g. missed school, missed rehabilitation appointments) and disengagement in leisure activities (e.g. going to the mall with friends) due to pain. The premise of why such actions would be counterproductive is highlighted, and adolescents are encouraged to consider their role in leading to behavioral change. In this way, adolescents are treated much like adults (Flor & Turk, 2011).

Group therapy

While only a few studies to date have evaluated group therapy for pediatric patients with chronic pain (Larsson & Carlsson, 1996; Larsson et al., 2005; Logan & Simons, 2010; Coakley & Barber, 2012; Gauntlett-Gilbert et al., 2012), results are suggestive of positive outcomes. For example, Coakley and Barber (2012) examined the feasibility and preliminary efficacy of a group-based, day-long intensive CBT and biobehavioral intervention for adolescents and their parents. Adolescents reported an increase in pain-related knowledge, and a belief that they could independently practice their new skills outside of session. Similarly, almost all caregivers reported an increase in knowledge about pain and non-pharmacological interventions (Coakley & Barber, 2012). Logan and Simmons (2010) found a group intervention based on social learning and cognitive behavioral theories was preliminarily associated with improvements in pain, school attendance, and some dimensions of depression, while Gauntlett-Gilbert and colleagues (2012) found that a 3-week, Acceptance and Commitment Therapy group residential program was associated with increased acceptance of pain, reductions in catastrophizing about pain, improvements in self-reported physical and social functioning, and enhanced directly observable physical functioning. Finally, a randomized control study examined the efficacy of nurse-led group-based relaxation training provided during school hours to small groups of preadolescent/adolescent students with chronic tension headaches (Larsson & Carlsson, 1996). The treatment group demonstrated clinically significant improvements in headaches as compared to both baseline functioning and to the control group. A larger series of replication studies (Larsson et al., 2005) confirmed these findings.

No studies to date, to our knowledge, have examined the usefulness of brief operant group therapy with adolescents with chronic pain, though it has been used with adults to good effect (e.g. Turner & Clancy, 1988; Thieme et al., 2003). When operant principles have been included in pediatric group CBT intervention efforts, parents are usually the targets of instruction. For example, Logan and Simons (2010) devoted a portion of a group-based CBT intervention to parental responses to pain (e.g. the operant model). Specifically, parents were taught operant principles while their children were concurrently introduced to cognitive strategies to address pain. Significant improvements in negative mood and self-esteem were found; school attendance, patient self-reported worst pain over a week’s time, and parent and patient reported perceptions of pain interference with school attendance and school performance also significantly improved (Logan & Simons, 2010).

Impetus for brief operant therapy group for adolescents with pain

Although adult chronic pain research has demonstrated the utility of operant group therapy, both alone and in combination with other psychological frameworks, little is known about the potential utility with pediatric chronic pain, particularly when principles are taught directly to adolescents. Yet, adolescents with chronic conditions are in the midst of developing increasing independence with regard to self-management of their illnesses (Jensen et al., 2003); and, past research clearly demonstrates that peers influence adolescents' expression of pain behaviors (Hatchette et al., 2008). Therefore, we thought that use of the operant model may be particularly useful in group interventions for adolescent patients with chronic pain, and thus created a brief operant therapy pain group for adolescents.

Pilot operant group: recruitment, attendance, and group logistics

A postdoctoral fellow and a pediatric psychologist led a 4-week, hospital-based, adolescent-focused group using the operant approach (Flor & Turk, 2011; session content in Table 1). Potential group members were recruited via advertisements sent to attending physicians, social workers, child life specialists, and psychologists at a large hematology/oncology hospital. Adolescents who were experiencing chronic pain and would be willing and able to attend the group were eligible for participation. The group consisted of four female participants and was heterogeneous in terms of primary medical diagnosis (acute lymphoblastic leukemia, congenital erythropoietic porphyria, and sickle cell disease [*n* = 2]), age (two 13-year-olds, one 16-year-old, and one 19-year-old), and race/ethnicity (50% Caucasian, 50% African-American). Subsequent to the conclusion of the group, qualitative feedback was obtained from participants through use of interviews. IRB approval to share the results of this group was obtained after the conclusion.

Illustrations from an operant focused pain group

Jasmine was a 13-year-old African-American female with sickle cell disease (SCD) who experienced frequent hospitalizations for pain crises. Jasmine was described as significantly distressed by her disease, the intermittent nature of severe pain crises, and her baseline level of pain. She was previously followed by Psychology to address pain but had a history of resistance. She attended all group sessions. Jasmine was initially quiet and reserved but warmed considerably during the group. She reported significant benefits from group participation and demonstrated acquired knowledge during discussions. For example, prior to group participation, Jasmine stated that she commonly discussed her pain in detail with family members and that she was very reluctant to spend time with friends outside of her home due to her pain. However, during the third session Jasmine reported that she was trying to avoid discussing her pain with family members and that she asked them to completely ignore her when she brings up her pain unless it was an emergency. Her family complied, and, as would be expected based on the operant model, Jasmine stated she began to focus less on her pain and engage in more well-behaviors. For example, at the beginning of the fourth session Jasmine reported that she went to the mall with friends that week and she had plans to go to the movies over the weekend. She reported motivation to maintain progress and asked for a referral to Rehabilitation Services to learn additional activity-based strategies.

Alexis was a 16-year-old African-American female with SCD who also experienced frequent hospitalizations for pain. She was diagnosed with ADHD-Combined and was followed by Psychology. She was described as sociable and open to new experiences but significantly distressed by chronic pain. Alexis actively participated in all sessions and demonstrated significant improvement in pain-related insight over the course of the group. She particularly appreciated the opportunity to meet patients with other diseases who experienced similar types of pain and functional disability. Over the course of the group, Alexis observed that she experienced less pain when texting with friends, looking for a job, spending time with friends, or doing stretches reviewed during Week 2. She demonstrated a solid understanding of the operant model of pain as evidenced by her report of how the responses of peers and family members to her increased demonstration of well-behaviors impacted her continued implementation of well-behaviors. Importantly, Alexis reported significant motivation to maintain progress and to apply lessons learned (e.g. using her friends to help her maintain well-behaviors, participation in activity when in pain).

Ashley was a 13-year-old Caucasian female with leukemia receiving cancer-directed therapy.

She was followed by Psychology due to frequent maladaptive behaviors that were conceptualized as attention-seeking in function, emotional lability, and interpersonal difficulties. She attended the first three sessions, but did not attend the final week due to illness. Ashley was very engaged in Week 1 but had difficulty participating in Weeks 2 and 3; her lack of participation in Week 3 was attributed to pain medication taken for post-surgical pain prior to session. Subsequent to group participation, Ashley shared with her psychologist that she enjoyed meeting other patients with different diseases who also experienced pain and that she found continued contact with group members beneficial.

Brittney was a 19-year-old Caucasian female with congenital erythropoietic porphyria. She had a complicated medical history, including osteopenia and chronic pain and was followed by Psychology for anxiety. Brittney was described as distrustful and slow-to-warm and had a history of negative misinterpretations of others' actions. She attended three sessions (missing the final session due to a prior conflict); however, her participation varied. She was engaged and motivated during Week 1 but complained of a migraine during Week 2. Brittney believed a group decision to ban the word pain during Week 3 undermined the realness of her pain experience and thus disengaged towards the end of this session. She later shared with her psychologist that she thought group leaders did not understand her pain experience and that she learned little new information, but that she appreciated meeting others with chronic pain.

Experiences and future directions

Because only two of the four participants fully participated in all group sessions, specific conclusions that can be drawn are somewhat limited. Despite this, all participants, including Brittney, reported that the opportunity to meet adolescents with other diseases who experienced similar pain issues was the most valued aspect of the group. This sense of commonality, despite experiencing pain from different origins, may have enabled them to learn from each other's experiences and to feel less isolated (Zelikovsky & Petrongolo, 2013). When the two adolescents with SCD were asked if they would have rather participated in a disease-specific group, both clearly stated a preference for the cross-disease model, noting they enjoyed meeting patients from other clinics and found doing so beneficial. Both described feeling less isolated by their diagnosis as a result of attending a group with patients with chronic pain with varying diagnoses. While the origins of pain will differ across disease processes, the experience of chronic pain and its impact on daily functioning and quality of life crosses disease boundaries.

Future groups may wish to optimize this common ground aspect of peer support – as finding commonalities and identifying ways to relate to other group members is often thought of as essential in group therapy (Stoiber & Kratochwill, 1998). It may be that adolescents would be more compelled by a message delivered by a peer (Hatchette et al., 2008) than one delivered by therapists. This was observed when Brittney discussed her use of social support with Alexis, who was reluctant to allow friends to visit during hospitalizations. Brittney was able to use her own experiences to demonstrate the benefits that resulted from visits with friends, including increased motivation to participate in social interactions when in pain. Moreover, since she had actually had these experiences, she could relate to Alexis in a very different way than a therapist. Peer support and peer pressure are common and important occurrences during adolescence, with both positive and negative results. Harnessing this natural state, within the confines of a therapist-supervised, evidence-based group, may be particularly beneficial.

Our experience adds to a growing body of literature that supports the feasibility of brief, targeted programs (Coakley & Barber, 2012; Fisher et al., 2014); however, it does not adequately answer questions regarding the efficacy of an adolescent group based upon the operant model of pain. While some of our patients were able to successfully implement learned operant principles, the social aspects of the group and related peer support appeared especially crucial for our adolescents. Thus, it may be that the non-specific aspects of the group treatment experience are more powerful than the specific operant learning model. This highlights the potential benefits of increasing use of social support and peer modeling across diagnoses in interventions for adolescents with chronic illness. Ultimately, a group therapy approach – regardless of theoretical orientation (cognitive-behavioral, operant) – may complement interventions implemented during individual psychotherapy, particularly with adolescents that may experience isolation or stigmatization as a result of their illness.

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