

# Psychological treatment of comorbid asthma and panic disorder in Latino adults: Results from a randomized controlled trial

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of music therapy on PD specifically. There are limited data and mixed findings supporting music therapy as a complementary treatment for asthma (Sliwka, Wloch, Tynor, & Nowobilski, 2014).

We hypothesized that participants who received CBPT would

concerns (Taylor et al., 2007). The subscales have good internal consistency (Wheaton, Deacon, McGrath, Berman, & Abramowitz, 2012) and the ASI-physical symptoms subscale is uniquely associated with PD (Olthuis, Watt, & Stewart, 2014). The questions range from 0 (very little) – 4 (very much) and a summary score is calculated for each subscale with higher scores indicating greater anxiety sensitivity. The ASI was examined as a mediator of change in PDSS in the CBPT group.

adaptive versus maladaptive behaviors; a session with a key family member to provide psychoeducation and assistance with carrying out treatment at home; and increasing patient activation and empowerment by improving communication with the asthma provider and the patient's role in health care decision-making. An electronic peak flow meter (Piko-1, nSpire, CO) was given to CBPT participants to provide a daily measure of peak expiratory flow (PEF) to help these participants distinguish between asthma and panic exacerbations. The StressEraser device was given to CBPT participants for home practice of HRV biofeedback. This device provides electronic monitoring of homework adherence and mastery by displaying more points for greater amplitudes of HRV.

Session content for MRT included supportive but non-directive counseling techniques about patients' experiences with asthma and panic; listening to relaxing music each session; paced breathing at a respiration rate chosen by participants as being helpful for relaxation. Participants listened to progressively less preferred relaxing music across sessions as they mastered their skills to relax and increase resistance to stress. During the second half of treatment, music therapy and relaxation breathing occurred simultaneously. An MP3 player with musical selections was given to participants for home practice of music therapy.

#### 1.3.10.

The therapists included a clinical psychology post-doctoral fellow and advanced graduate students. Extensive training was provided on both treatment manuals as part of a 2-day workshop and followed by weekly 2-h meetings over 1 month. Weekly supervision was conducted between therapist and supervisor, and all therapy sessions were videotaped. Treatment integrity ratings were conducted on all sessions and based on the treatment manuals to assess the extent to which items were covered during each session. Treatment adherence by participants was assessed at the start of

differences were present. Credibility/expectancy remained high in both groups across mid-treatment and post-treatment with no effect of time. Treatment integrity ratings based on video sessions were very high in both groups (range for CBPT: 88–96%; range for MRT: 91–96%) and no between-group differences were found,  $F(1, 295) = 0.42, p = 0.52$ .

## 2.2. Post-treatment and 3-month follow-up

Both groups showed within-group improvements in PDS from baseline to post-treatment (CBPT,  $p = 0.001$ ; MRT,  $p < 0.0001$ ); from baseline to 3-month follow-up (CBPT,  $p < 0.0001$ ; MRT,  $p < 0.0001$ ). Similar findings emerged on the CGI for treatment responders as both groups showed improvement by post-treatment (CBPT = 30%, MRT = 21%), and a large number of treatment responders by 3-month follow-up (CBPT = 62%, MRT = 62%). Effect size for the % change of responders on CGI

mid-treatment to 3-month follow-up was 898.1% (~9 fold increase) for CBPT and 100% for MRT. No between-group differences were found and the group x time interaction was not significant for either measure (Table 2).

## 2.3. Post-treatment and 3-month follow-up

( $p = 0.008$ ). No other between-group comparisons on any baseline outcome variables were significant. Although the two groups began at different levels for ICS adherence, the rate of behavior change favored CBPT. These findings on the MARS reflect CBPT closing the gap in these initial baseline differences on adherence across time. The lack of improvement in MRT is not explained by a ceiling effect, as ICS adherence stayed below the cutoff of 4.5 for good adherence (Cohen et al., 2009). Therefore, CBPT appeared to offer an advantage over MRT on improving ICS adherence across time.

Both groups showed improvements in asthma control (ACQ) from baseline to post-treatment (CBPT,  $p < 0.001$ ; MRT,  $p = 0.02$ ), and from baseline to 3-month follow-up (CBPT,  $p = 0.004$ ; MRT,  $p = 0.007$ ). Both groups also showed improvements on %FEV<sub>1</sub> from baseline to post-treatment (CBPT,  $p = 0.01$ ; MRT,  $p < 0.001$ ). However, no between-group differences were found and the group x time interaction was not significant for ACQ or %FEV<sub>1</sub>.

#### 2.4. Secondary Outcomes

Both groups also showed improvements on all other anxiety measures from baseline to post-treatment and 3-month follow-up on the ASI subscales, BSQ, and AGOR (Table 2). Group x time interactions were not significant on any secondary measures. A group effect showed that MRT participants reported overall lower levels

$P_M = 0.28$ . Findings were not significant for these mediational pathways in MRT. The ASI social scale was not a significant mediator of PDSS for either CBPT or MRT.

Within subject cross lag panel analyses showed stability in the measures in that earlier levels of ASI physical were associated with later levels of ASI physical,  $b_{MM} = 0.74$ ,  $p < 0.001$ , and prior PDSS levels predicted later PDSS,  $b_{OO} = 0.52$ ,  $p < 0.01$ . Earlier levels of ASI physical were not related to subsequent PDSS scores,  $b_{MO} = 0.02$ ,  $p = 0.88$ . Prior levels of PDSS did not predict later levels of ASI physical,  $b_{OM} = 0.17$ ,  $p = 0.25$  (reverse mediation). These analyses show that changes in the outcome (PDSS) did not cause changes in the mediator (ASI physical). However, these data do not support the notion that declines in ASI physical caused subsequent declines in PDSS in the CBPT group and thus, a third

variable might explain this directional relationship. Similar findings emerged when examining the relationships between ASI cognitive and PDSS.

Exploratory mediational analyses were conducted for the MRT group and focused on the BDI as a general measure in contrast with the specificity of ASI as a mediator in CBPT. The BDI was selected as a mediator given the significant within group changes with large effects for the BDI in MRT (see [Table 2](#)), and based on prior literature showing improvements in depressive symptoms with music therapy ([Chan et al., 2009](#)). The mediated pathways over time to PDSS through BDI were significant for both the linear



MRT only, as BDI was not a mediator in CBPT analyses. Within-subject cross lag panel analyses in MRT showed that earlier

in either group and, thus no within-group or between-group differences were seen.

### 3. Discussion

Both CBPT and MRT improved on several measures of PD, anxiety, and asthma outcomes at post-treatment and 3-month follow-up. CBPT had an advantage over MRT on improvement in ICS medication adherence assessed by self-report, but did not outperform MRT on panic outcomes. Mediation analyses showed that the effect of CBPT on improvement in PD severity across time was mediated by time-matched anxiety sensitivity, and depression mediated improvements in PD severity in MRT. However, support





Sliwka, A., Wloch, T., Tynor, D., & Nowobilski, R. (2014). Do asthmatics benefit from music therapy? A systematic review. *Cochrane Database of Systematic Reviews*, 22(4), 756–766. <http://dx.doi.org/10.1016/j.ctim.2014.07.002>.