

Commentary: Warner, L.J., Lumley, M.A., Casey, R.J., Pierantoni, W., Salazar, R., Zoratt, E.M., Enberg, R., and Simon, M.R.—Health Effects of Written Emotional Disclosure in Adolescents with Asthma: A Randomized Controlled Trial

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Contributions of This Randomized Controlled Trial

Warner and colleagues' report of a randomized controlled trial (RCT) of the effects of written emotional disclosure (WED) on the psychological and health outcomes of adolescents with asthma is an important contribution in several respects: To our knowledge, this is the first test of the efficacy of WED among adolescents with a chronic illness. Based on the high prevalence of pediatric asthma among adolescents, the potential impact of psychological factors on asthma symptomatology (McQuaid & Walders, 2003), and evidence for the benefit of WED on adults with asthma (Smyth, Stone, Hurewitz, & Kaell, 1999), adolescents with asthma are an important population in which to test the impact of WED. Warner and colleagues demonstrated that WED was associated with enhanced positive affect and decreased internalizing symptoms, asthma symptoms, and functional disability among adolescents with baseline elevations of such problems. The comprehensive impact of the WED intervention on these outcomes in adolescents with asthma is noteworthy because to our knowledge, they are unique in pediatric populations. A previous study conducted with young adults with cystic fibrosis (Taylor, Wallander, Anderson, Beasley, & Brown, 2003) found that although WED was associated with a reduction in the number of hospitalizations, no effects on health status or psychological adjustment were identified. Schwartz and Drotar (2004a) found no effects of WED on long-term mood, distress, health-related quality of life of parents of children with chronic illness such as cancer when compared with a group that wrote about their activities. Moreover, the significance of Warner et al.'s findings is heightened by their consistency

with theory-based predictions of the impact of WED on psychological and physical health (Pennebaker, 1997; Sloan & Marx, 2004a,b).

One reason for the success of Warner et al.'s study in improving psychological outcomes was that this research team successfully replicated the WED paradigm in an outpatient home setting. Schwartz and Drotar (2004a) tested the effects of WED in an inpatient setting, which afforded less control of intervention procedures, given the inherent stress and distraction of these settings. Such setting-based constraints may have limited participants' abilities to concentrate and engage in higher order cognitive processing, a critical process that may account for the positive influence of writing about emotions on psychological and health outcomes (Sloan & Marx, 2004a,b).

The authors' decision to conduct a home-based intervention was driven by their interest in studying the WED intervention in a way that could be implemented by adolescents (Warner, Lumley, & Casey, personal communication, July 28, 2005). Conducting a laboratory-based study of the impact of WED would have afforded more experimental control but would not have had the ecological validity of a home-based intervention. In addition, given the considerable challenges to recruitment and follow-up in intervention studies, the authors believed that requiring adolescents to participate in multiple appointments in an outpatient laboratory-based intervention would have resulted in fewer participants than was the case for this study.

Nevertheless, conducting any psychological intervention in participants' home setting is a daunting task that requires persistence and commitment from investigators. The authors are to be commended for implementing their study in the home setting such that 50 of 61 adolescents

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were able to complete it. Moreover, adolescents not only adhered to the protocol but demonstrated predicted effects of the WED task on the writing process. For example, participants not only wrote about stressful topics but included more negative emotion in their writing, demonstrated greater insight and causal words, as well as less anger and greater calm after writing.

Warner and colleagues' analysis of words from their participants' written essays helped to illuminate the process by which the effect of WED was achieved. Consistent with previous research and theory about WED (Pennebaker & Francis, 1996; Pennebaker, Mayne, & Francis, 1997; Schwartz & Drotar, 2004b), adolescents who included a higher proportion of insight, causal, and negative emotion words in their written disclosures had better outcomes such as fewer internalizing behavioral problems and less disability. Moreover, adolescents whose WED essays included increased proportion of positive words written over the days of their writing tended to show lower levels of internalizing problems and disability and higher positive affect on follow-up.

The findings of Warner et al.'s study also highlighted the importance of identifying adolescents who benefited from the experience of WED. In this regard, adolescents with higher self-reported asthma symptoms and disability benefited most from the intervention. In contrast, those adolescents who demonstrated few or no physical symptoms did not benefit from WED. These findings suggest that adolescents with asthma who were more distressed and burdened by their symptoms may have been more motivated to utilize the WED task and to process their experiences than those who were less distressed. Moreover, writing may have also helped adolescents who were coping with significant asthma-related symptoms to think of alternatives to manage their symptoms.

The authors are to be commended for including the effect sizes of the WED intervention and attending to the issue of clinical significance in their study design and analysis. Moreover, the authors' data analytic approach considered the baseline value of outcome measures to determine how the baseline level moderated intervention effects. This is a useful analytic approach that should be utilized more frequently in research on psychological interventions with pediatric chronic illness populations, which are quite heterogeneous with respect to the nature and severity of associated psychological adjustment problems (Drotar, *in press*).

Methodological and Logistical Challenges

Warner and colleagues have made a significant contribution to research on WED in pediatric chronic illness

populations and have invited others to replicate and extend their findings. In this spirit, several logistical and methodological issues, many of which were considered by the authors in their excellent discussion, bear comment. Despite the considerable methodological strengths of the study, several limitations of the method should be considered in interpreting Warner et al.'s findings. For example, as noted by the authors, the participants in the study were a subset (about one fourth) of the total number of eligible participants. These participants may have been the most motivated and economically advantaged of the pool of eligible participants. Studies with other pediatric chronic illness populations (Riekert & Drotar, 1999), including asthma (Zebracki et al., 2003) have described greater psychological competence and family resources among research participants versus nonparticipants.

The relatively homogeneous sample that was obtained in this study limits the potential generalizability of the findings to other samples of adolescents with asthma. Warner et al.'s sample, which is not representative of the diverse population of children and adolescents with asthma in the United States of America (McQuaid & Walders, 2003), included primarily upper middle-class Caucasians. Consequently, it is not clear whether a home-based WED intervention would be feasible and/or effective with a sample of ethnically diverse adolescents from families of lower socioeconomic status. For this reason, it would be informative to test the generalizability of the application of the WED intervention to diverse populations, including adolescents with clinically significant asthma-related morbidity such as recurrent symptoms, emergency room visits, and/or hospitalizations that are attributable to asthma-related symptoms. But this will not be an easy task as the authors can attest.

It is important to note that the authors were primarily interested in conducting their research on a broader, more diverse sample. In fact, they initially conducted a feasibility test in an inner-city public hospital clinic serving mainly low-income, Medicaid-funded African-American families. However, they reconsidered their decision based on lower than anticipated interest and follow-through rates, despite extensive attempts (i.e., multiple telephone contacts and letters) to promote participation and adherence to the protocol (Warner et al., personal communication, July 25, 2005). The limited number of participants who enrolled despite extensive recruitment efforts necessitated ending recruitment with this population and starting over in a different setting (Warner et al., personal communication, July 25, 2005). Other researchers have found that low-income families who have children with chronic health conditions such as asthma typically face very salient challenges to obtaining and

sustaining health and mental health care for their children, which may also limit their participation in research (McQuaid & Walders, 2003). Based on the authors' experience, one lesson for intervention researchers is that psychological intervention researchers need to be flexible and realistic in their approach and to conduct pilot and feasibility studies to "test the waters" concerning the feasibility of their approach (Drotar, in press). Even very well designed studies may not be feasible for specific populations in some pediatric settings.

The authors' comprehensive approach to the measurement of the impact of the WED intervention had many strengths. However, as was the case with the recruitment of their population, some compromises needed to be made in study method based on feasibility considerations. For example, the authors experienced considerable logistical difficulties in obtaining optimal measures of lung function, symptoms, and medication usage, which would have been important to obtain to document the clinical significance of the intervention effects (Warner et al., personal communication, July 25, 2005). In fact, the authors planned to obtain pre- and postspirometry data to assess the quality of pulmonary function for all participants and from adolescents concerning their asthma symptom variation, medication usage, physician visits, and school absences during the study. However, such a data collection plan proved to be prohibitively costly and time consuming. Moreover, it was difficult to verify the accuracy of such data and ensure quality control and consistency of measurement (Warner et al., personal communication, July 25, 2005). For example, the authors found that in some clinics, spirometry was commonly obtained; whereas in others it was conducted only under certain circumstances. Consequently, the decision concerning whether to obtain spirometry data in this study raised ethical questions (e.g., if a test is not clinically indicated should it be performed for research alone?) as well as resource-related questions (e.g., if a test should be performed, who should pay for it: insurance or the researcher)? Because the authors had no funding for the spirometry tests, they needed to abide by individual physicians' preferences and clinical judgments regarding the appropriateness of the testing for a particular patient. Consequently, only a small number of participants obtained two data points on this measure.

The resource and logistical issues encountered by Warner and colleagues in conducting their research are part and parcel of any psychological intervention study with pediatric chronic illness populations (Drotar, in press). Researchers who conduct intervention studies inevitably face very difficult costs versus benefits decisions in

implementing such research based on the research question, resources, and constraints imposed by the project and setting (Drotar, in press). For this reason, very difficult tradeoffs often need to be made. Given such constraints, it is unrealistic to assume that psychological intervention researchers will have the opportunity to implement the "ideal" intervention protocol with pediatric populations. Moreover, even if investigators have the resources to conduct comprehensive, valid assessments of intervention outcomes in all the relevant outcome domains, their proposed measurement plan may not be feasible for some participants. Consequently, the goal of psychological intervention with pediatric populations is to implement the best possible design, given feasibility constraints. In this regard, Warner et al.'s study was a clear success.

Several other measurement-related issues in Warner et al.'s study should be noted. As noted above, the clinical significance of the authors' findings are limited by the absence of spirometry data. In addition, the authors' approach to measurement of clinical significance was less than ideal. For example, the authors did not use state of the art analyses of clinical significance such as the Reliable Change Index (Jacobson & Truax 1991), which provides a method of assessing changes in clinical symptoms in reference to norms. The .5 standard deviation, which was defined by the authors as a clinically significant difference in outcomes, was not based on a validated procedure and may or may not correspond to a clinically significant difference in the outcomes that were assessed.

A final methodological issue was raised by Warner et al.'s analysis of data based on the narratives that were generated by the writing task. Although the correlations that were found between the linguistic categories and selected outcomes were informative, these results should be interpreted cautiously in light of the multiple correlations, the marginal results for some comparisons, and the absence of a clear theoretical rationale for analyzing both average words used and change in word usage over time. Moreover, it is unclear why the linguistic categories that were studied related to some of the outcomes but not to others. Other studies have also found selective and essentially unexplained effects of linguistic predictors in analysis of data from the WED intervention. For example, Schwartz and Drotar (2004b) found that linguistic categories predicted physical health-related quality of life but not other physical or psychosocial outcomes.

Future Directions

What are the future directions of research based on the WED paradigm with pediatric populations? Clearly,

testing the generalizability of the findings to other pediatric populations is a priority (Smyth & Catley, 2002). It is very possible that the WED task may be feasible and effective for only some pediatric populations. In fact, effective psychological interventions with pediatric populations need to be targeted to specific populations and clinical problems (Drotar, in press). At present, the boundary conditions for the feasibility and efficacy of the WED intervention are unknown for pediatric populations and represent an important area of research.

Another potentially interesting application of the WED intervention paradigm would be with adolescents for whom stress exacerbates their asthma symptoms and also contributes to asthma-related functional morbidity (e.g., hospitalizations) (Sandberg et al., 2000). It is possible that the WED intervention has selective benefits for adolescents with asthma whose symptoms are known to be sensitive to psychological stress, but it is not clear. Finally, it is not clear whether the WED intervention can be effectively generalized to younger children in any chronic illness population.

Another future research recommendation is to determine whether the WED intervention can be successfully incorporated in clinical care for children and adolescents with asthma. This is a very challenging clinical application, which may or may not be feasible, given that adolescents with asthma are not seen frequently for routine medical care. To enhance the feasibility of writing about emotions for adolescents, Warner and colleagues (personal communication, July 25, 2005) suggested that conducting WED via electronic mail might make the intervention more appealing to adolescents and circumvent some of the potential resistance to "a writing assignment". In fact, many adolescents spend much of time on the computer, and internet-based interventions have been implemented with other pediatric populations (Brown, Winzelberg, Abascal, & Taylor, 2004; Ritterband et al., 2003). Moreover, at least one successful trial has been conducted with the WED paradigm with adults via email (Sheese, Brown, & Graziano, 2004).

Alternative study designs will be needed to understand the effects of the critical components of WED versus related interventions. For this reason, studies that test the standard WED versus "enhanced" WED with additional feedback to participants and/or with stress management skills training are needed. Such studies would facilitate understanding of the value-added impact of specific intervention components in reducing psychological distress in pediatric chronic illness populations (Warner et al., personal communication, July 25, 2005).

One final issue about this study bears comment: This important project was conducted as a part of the

first author's dissertation. To my mind, this makes the authors' research achievement all the more impressive, given the limitations of financial resources and time constraints involved in such research. Warner et al.'s research was extraordinarily efficient as defined by the ratio of scientific value-added significance relative to the economic costs. But trainees and mentors know who bears the physical costs and labors of such work (i.e., trainees and mentors). Warner's team of mentors are to be congratulated for their mentorship and in not dissuading her from conducting this research, however tempting that might have been. (Perhaps they tried, but to her credit she persisted.) The mentors and the graduate program also provided much needed collaborative support to develop and implement intervention research with a difficult and compelling pediatric population. In our experience, all of this is very difficult to achieve, but it is absolutely critical for training the intervention researchers of the future (Drotar, Palermo, & Landis, 2003). Warner et al.'s research involved an extraordinary research training experience that models the way that intervention researchers need to be trained. Is there any better way to be trained to be an intervention researcher than conducting such research under the supervision of experienced mentors? Probably not. But such work is clearly not for the faint of heart or purpose.

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