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ScienceDirect

Behavior Therapy 56(2019) 1063–1074

Behavior Therapy

www.elsevier.com/locate/bt

Baseline Client Interpersonal Agency Moderates the Indirect Effect of Treatment on Long-term Worry in Variants of CBT for Generalized Anxiety Disorder

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In a recent trial for generalized anxiety disorder (GAD), cognitive-behavioral therapy (CBT) integrated with motivational interviewing (MI) promoted more long-term worry reduction than CBT alone (Westra, Constantino, & Antony, 2016). A follow-up analysis found that CBT vs. MI-CBT clients evidenced greater increases in friendly submissiveness (FS) across treatment, which in turn promoted lower long-term worry (Constantino, Romano, Coyne, Westra, & Antony, 2018). It was unsurprising that traditional directive CBT promoted more FS than when person-centered MI was integrated; however, given that problematic low agency characterizes GAD, that greater FS promoted *better* outcome was unexpected. To further unpack this unexpected result, we tested the following moderated mediation hypothesis: for clients with more vs. less problematic low agency at baseline, CBT would still promote more in-session FS than MI-CBT, but this increase would in turn predict *increased* worry over follow-up. Clients receiving CBT ($n = 43$) or MI-CBT ($n = 42$) rated their interpersonal problems at baseline and their worry after treatment and across 12-month follow-up. Therapists rated clients' in-session FS multiple times. As predicted, multilevel modeling revealed that for clients with more problematic low agency, CBT vs. MI-CBT facilitated greater FS, which in turn related to increased worry across follow-up. For clients with more problematic high agency, CBT's facilitation of greater FS related to reduced worry across follow-up. A baseline interpersonal problem characteristic of GAD may have implications for treatment matching and for appreciating different pathways to long-term improvement, or deterioration, for different GAD subgroups.

This research was supported by the Canadian Institutes of Health Research (MOP -114909).

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Keywords: interpersonal agency; in-session interpersonal behavior; generalized anxiety disorder; cognitive-behavioral therapy; motivational interviewing

A GROWING BODY OF RESEARCH has linked interpersonal difficulties with generalized anxiety disorder (GAD). For example, compared with nonanxious

controls, persons with GAD are more likely to perceive interpersonal threat in their interactions (Mogg, Mathews, & Eysenck, 1992; Mogg, Millar, & Bradley, 2000), have greater relational hypervigilance and suspiciousness, be more easily offended by others, be more dependent on others, and seek more reassurance from others (Gasperini, Battaglia, Diaferia, & Bellodi, 1990). Furthermore, interpersonal concerns are a primary worry domain in GAD (Breitholtz, Johansson, & Öst, 1999; Craske, Rapee, Jackel, & Barlow, 1989; Hoyer, Becker, & Roth, 2001; Sanderson & Barlow, 1990), and people with vs. without this disorder are more likely to have insecure attachments (Cassidy, Lichtenstein-Phelps, Sibrava, Thomas, & Borkovec, 2009; Mickelson, Kessler, & Shaver, 1997; Viana & Rabian, 2008).

Although interpersonal problems in GAD can vary (Przeworski et al., 2011), several studies have demonstrated a *prototypical* pattern of self-reported excessive friendliness and submissiveness, such as being nonassertive, exploitable, and overly nurturing with others (Salzer et al., 2008; Salzer, Pincus, Winkelbach, Leichsenring, & Leibing, 2011). Further, such problematic "friendly submissiveness" is more common in clients with GAD than for those with other psychiatric disorders (Gomez Penedo, Constantino, Coyne, Westra, & Antony, 2017). Given the potential centrality of these interpersonal problems in the etiology and maintenance of GAD, it follows that they may also influence the process and outcome of treatments for this condition (Borkovec, Ray, & Stober, 1998; Newman, Castonguay, Borkovec, Fisher, & Nordberg, 2008).

Empirically supporting this view, several studies in which clients received the most commonly delivered interventions for GAD, behavioral and cognitive-behavioral therapy (CBT), suggest that more interpersonal difficulties are associated with poorer outcomes both at posttreatment and long-term follow-up, and that many clients complete treatment with unresolved interpersonal problems (Borkovec, Newman, Pincus, & Lytle, 2002; Millstein, Orsillo, Hayes-Skelton, & Roemer, 2015). Moreover, whereas CBT has well-established efficacy for anxiety disorders in general (Watts, Turnell, Kladnitski, Newby, & Andrews, 2015), it has more modest success rates for GAD specifically (Cuijpers et al., 2014; Hunot, Churchill, Teixeira, & Silva De Lima, 2007), which implicates interpersonal problems as a specific risk factor for poorer response. Thus, some have argued that explicitly integrating relational strategies into CBT for GAD could represent one pathway to enhancing its efficacy (Borkovec et al., 2002; Newman et al., 2008; Westra & Constantino, in press).

Consistent with this notion, a recent clinical trial for GAD compared traditional CBT to CBT that integrated motivational interviewing (MI) specifically to address clients' interpersonal resistance to the treatment or therapist (Westra, Constantino, & Antony, 2016). In the context of GAD, resistance may result from clients' ambivalence about relinquishing their worry (despite that being the primary target of CBT), which is often perceived as both a source of distress and as a way to maintain control (Newman, Llera, Erickson, Przeworski, & Castonguay, 2013). Moreover, given that clients with GAD tend to present as under agentic and overly communal, resistance may represent an adaptive interpersonal risk-taking attempt at assertiveness. In these moments, it is possible that typical CBT strategies, such as continuing to push for worry reduction and reinforcing the treatment rationale, might unintentionally recapitulate the interpersonal problems that are most characteristic of GAD (i.e., a person with GAD submits to an interacting other's demands; Westra & Constantino, in press). Ultimately, if such an interpersonal pattern is indeed tied to the etiology and maintenance of GAD pathology, such a pattern might render traditional CBT less effective for these clients.

In contrast, MI is a client-centered approach that seeks to enhance clients' self-efficacy and assertiveness (Miller & Rollnick, 2002), precisely during moments when they resist (Aviram, Westra, Constantino, & Antony, 2016). In these moments, the MI-CBT therapists in the Westra et al. (2016) trial engaged a "spirit" of empathy, evocation, and collaboration, while simultaneously using techniques designed to elicit clients' own arguments for change. Such a response might represent a novel, corrective experience for clients with GAD who may be used to others dominating and dismissing their needs (Constantino & Westra, 2012). Over time, this emancipating behavior on the part of the therapist might promote an increase in clients' self-confidence and assertiveness during treatment, which could translate to intrinsically motivated actions to reduce worry. Moreover, any increased assertiveness might eventually translate to other relationships outside of therapy, which could mitigate interpersonal risk for GAD symptoms.

Supporting these notions, Westra and colleagues (2016) found that although CBT and MI-CBT achieved comparable posttreatment outcomes, MI-CBT significantly outperformed CBT across a 1-year follow-up. Specifically, whereas CBT clients' worry either remained stable or slightly increased across the follow-up period, MI-CBT clients showed continued worry reduction. The authors posited that this "sleeper" effect may have emerged, in part, because the benefits of the corrective relational experience of

receiving support for autonomy-taking (and the increased self-efficacy it may promote) may not emerge until after the therapist is no longer available, when clients are left to implement worry-reduction strategies on their own.

To test this notion, Constantino et al. (2018) examined whether an increase in clients' interpersonal assertiveness and a decrease in their submissiveness during therapy explained the additive long-term efficacy of MI-CBT vs. CBT. The authors used the Impact Message Inventory (IMI; Kiesler & Schmidt, 2006) to examine changes in clients' friendly dominant and friendly submissive interpersonal impacts on their therapist during treatment. Although an increase in friendly dominance (FD) was related to lower long-term worry levels across both treatments, such changes did not mediate the comparative treatment effect across follow-up. Thus, the authors suggested that an increase in clients' FD might be a facilitative factor common to both CBT and MI-CBT. On the other hand, change in friendly submissiveness (FS) *did* mediate the relation between treatment condition and worry level, but in the opposite direction than expected. Namely, although CBT clients demonstrated the hypothesized greater increases in FS throughout treatment compared to MI-CBT clients, such increases were associated with *lower* worry at 12-month follow-up. Put another way, CBT's facilitation of greater increases in FS allowed these clients to achieve lower long-term worry levels that became closer to, though were still slightly higher than, the MI-CBT clients' long-term worry levels. The authors speculated that increased FS related to better outcome in CBT because it may reflect a type of trusting compliance with this directive therapeutic approach.

However, as per the interpersonal context discussed previously, greater FS, or compliance, should theoretically reinforce, not help to reduce, GAD symptoms. Thus, it is possible that the extent to which increased FS is beneficial may depend on the *degree to which* clients are characteristically under agentic in their relationships. In the present study, we tested this moderated mediation question by again drawing on the Westra et al. (2016) trial data. Specifically, we hypothesized that CBT would promote greater increases in client FS than MI-CBT (a direct effect already established in the aforementioned Constantino et al., 2018, study), which would in turn predict *better* follow-up outcome for clients who are *less* problematically under agentic (submissive) at baseline and *worse* follow-up outcome for clients who are *more* problematically under agentic (submissive) at baseline. In other words, prior research has established that CBT vs. MI-CBT would promote greater increases in client FS (the "a" path), but we expected that the association between FS and long-term worry reduction would differ depending on the degree to which clients' are characteristically under agentic when they begin treatment (agency as a moderator of the "b" path).

Method

PARTICIPANTS

Clients

Eighty-five adults were randomly assigned to either MI-CBT ($n = 42$) or CBT ($n = 43$) across two sites in Toronto, Canada. To be included in the parent trial, clients were required to have a principal diagnosis of GAD based on *Diagnostic and Statistical Manual of Mental Disorders* version IV, Text Revision (DSM-IV-TR; American Psychiatric Association, 2000) and version 5 (DSM- 5; American Psychiatric Association, 2013) criteria. Clients also had to score equal to, or above, the cutoff of 68 points for high worry severity, as measured by the Penn State Worry Questionnaire (PSWQ; Meyer, Miller, Metzger, & Borkovec, 1990). Clients taking antidepressant medications were eligible if they (a) used the same medication and dosage for at least 3 months prior to the start of the trial, and (b) agreed to maintain the same medication and dose throughout. Clients who discontinued a psychopharmacological treatment were included if they had a 3-month washout period before the trial. To enhance generalizability, the only comorbidity exclusions were psychotic spectrum disorders, bipolar disorders, major cognitive impairment, substance dependence within the past 6 months, and/or significant current suicidal ideation.

Table 1 presents the sample characteristics at baseline by treatment group. Regarding demographic characteristics, clients in the two conditions differed only on gender, $\chi^2(1) = 4.24$, $p = .04$, with CBT having more women and fewer men than MI-CBT. Additionally, there were more clients on psychotropic medications in CBT vs. MI-CBT, $\chi^2(1) = 3.94$, $p = .05$. Furthermore, as measured by the Change Questionnaire (CQ; Miller & Johnson, 2008), CBT clients presented with greater motivation to change than MI-CBT clients, $t(83) = 2.55$, $p = .01$. Finally, medication use and motivation also varied between the two treatment sites. Specific to the present study, the treatments did not significantly differ on baseline worry (PSWQ) or on problematic interpersonal agency, as per the *Inventory of Interpersonal Problems-Circumplex* (IIP-C; Horowitz, Alden, Wiggins, & Pincus, 2000) discussed below.

Therapists

Twenty-one female therapists self-selected into treatment condition to control for allegiance and

Table 1
Baseline Client's Characteristics by Treatment Condition

Variables	CBT (n = 43)			MI-CBT (n = 42)		
	M (*SD*)	*n*	%	*M* (*SD*)	*n*	%
Age	34.19 (11.92)			32.45 (10.54)		
Gender*						
Women		41	95.34		34	80.95
Men		2	4.65		8	19.05
Race						
White		32	74.42		31	73.81
Asian		5	11.62		6	14.29
Hispanic		2	4.65		1	2.38
Multiracial/other		4	9.30		4	9.52
Annual household income						
Less than 25,000		10	23.26		6	14.29
25,000-50,000		9	20.93		8	19.05
50,000-75,000		11	25.58		8	19.05
75,000-100,000		8	18.60		6	14.29
100,000		5	11.63		13	30.95
Education						
High school or less		4	9.30		2	4.76
Some college/university		13	30.23		9	21.43
Completed college		18	41.86		19	45.24
Some graduate school		8	18.60		12	28.57
Marital status						
Single		19	44.19		18	42.86
Cohabiting/married		23	54.76		24	57.14
Psychotropic use*						
Yes		14	32.56		6	14.29
No		29	67.44		36	85.71
Comorbidity						
Anxiety disorder		31	72.09		29	69.05
Depression/dysthymia		17	39.53		13	30.95
PSWQ	75.05 (3.43)			74.69 (3.44)		
CQ*	107.23 (8.76)			101.60 (11.50)		
IIP Agency	-3.46 (2.63)			-3.73 (1.98)		

Note. *M* = Mean; *SD* = standard deviation; CBT = cognitive-behavioral therapy; MI = motivational interviewing; PSWQ = Penn State Worry Questionnaire; CQ = Change
Questionnaire; IIP = Inventory of Interpersonal Problems
* There is a significant difference between the two conditions ($p < .05$)

crossover effects; 9 provided MI-CBT and 12 provided CBT. On average, across both conditions, the therapists were 28.76 years old (*SD* = 3.46 years) and had 294.74 hours of clinical experience (*SD* = 420.44 hours). Neither age nor experience differed between treatment conditions. For both conditions, pre-trial training included participating in clinical workshops and treating pilot cases with feedback provided by experts of the respective therapies. During the trial, therapists received weekly supervision by these same experts. As expected with this additive design, independent observers rated therapists in both conditions as showing a high level of CBT competence. Also, as expected, observers rated MI use and integrity higher in MI-CBT vs. CBT alone (see Westra et al., 2016 for details).

Treatments

All clients received 15 weekly (50 min) sessions, plus two "booster" sessions at 1 and 3 months after termination. Clients in MI-CBT received up to 4 initial sessions of MI only followed by 11 sessions of CBT with MI responsively integrated to address client resistance. (Although most MI-CBT clients received these 4 initial sessions of pure MI, for those clients who were highly motivated to engage in change-oriented strategies, the shift into integrative MI-CBT occurred 1-2 sessions earlier.)

CBT

Therapists delivered CBT according to several evidence-based protocols for GAD (e.g., Craske & Barlow, 2006; Zinbarg, Craske, & Barlow, 2006). The main techniques included psychoeducation,

cognitive self-monitoring and restructuring, progressive muscle relaxation, behavioral interventions, and, when necessary, sleep strategies. CBT therapists were trained to use strategies both for preventing and responding to client noncompliance (e.g., resistance) that were drawn from the CBT literature (e.g., Beck, 2005). Specifically, preventative strategies included collaborative negotiation of goals and the provision of a rationale for all treatment tasks, whereas responsive strategies included problem solving or engaging in a functional analysis.

MI-CBT

Therapists delivered MI-CBT according to the same CBT protocols, with MI techniques integrated according to Westra's (2012) guidelines for GAD. MI is a client-centered approach that seeks to resolve clients' change ambivalence and to reduce any resulting behavioral resistance to the treatment (Miller & Rollnick, 2002). MI consists of specific techniques such as "rolling with" vs. challenging client resistance and developing discrepancies between clients' current and most valued selves. Therapists also work from a foundational "spirit" of evocation, empathy, and support for client autonomy (rather than acting as an external change agent or trying to explicitly counteract resistance). In the Westra et al. (2016) trial, the integration of MI into CBT was accomplished in two ways. First, CBT strategies were delivered with MI "spirit." Second, therapists fully shifted into MI (and suspended CBT) when they observed markers of client resistance; when such resistance was resolved, therapists shifted back into CBT.

MEASURES

Interpersonal Problems

To assess interpersonal problems, clients completed the 32-item IIP-C (Horowitz et al., 2000), a measure that has been found to possess good psychometric properties (Soldz, Budman, Demby, & Merry, 1995). The items, which are rated on a scale from 0 (*not at all*) to 4 (*extremely*), are theoretically distributed in a circumplex structure, based on the primary interpersonal dimensions of communion (ranging from overly cold to overly nurturant behaviors) and agency (ranging from overly nonassertive to overly domineering behaviors). Across these two dimensions, the IIP-C yields eight interpersonal problem domains (i.e., [being too] domineering, intrusive, overly nurturant, exploitable, nonassertive, socially inhibited, cold, and vindictive). For the present study, we focused on the agency dimension, which is calculated according to the following weighted formula (Ruiz et al., 2004): Agency = .25 [domineering – nonassertive + .71 (intrusive + vindictive – socially inhibited – exploitable)]. The possible scores for this dimension range from -9.68 (under agentic) to 9.68 (overly agentic). The six subscales used to compute this dimension demonstrated adequate internal consistency in the present sample (Cronbach's αs = .72 to .85).

Interpersonal Impacts

To assess clients' interpersonal style during therapy, therapists completed the Impact Message Inventory (IMI; Kiesler & Schmidt, 2006). The IMI relies on the theory that the interpersonal style of a given person can be assessed by the impact messages received by an interacting other during an exchange (Kiesler, 1996). This idea is based on Kiesler's *complementary principle*, which postulates that the positions of two interactants tend to be similar in terms of affiliation (e.g., friendliness pulls for a friendliness), but tend to be opposed in terms of the control or power distribution in the dyad (e.g., dominance pulls for submission).

Also a circumplex, the IMI consists of 56 items rated on a scale from 1 (*not at all*) to 4 (*very much so*), which divides into eight subscales that reflect combinations of the interpersonal dimensions of affiliation (ranging from hostile to friendly impacts) and control (ranging from submissive to dominant impacts): hostile, hostile-dominant, dominant, friendly-dominant, friendly, friendly-submissive, submissive, hostile-submissive. In this study, we focused on the friendly-submissive scale based on the aforementioned evidence that changes in FS mediated the long-term effect of treatment on worry (Constantino et al., 2018). To calculate FS at each time point, we used the following weighted formula: FS + .707 (F + S). This weighted score has a theoretical range from 16.90 to 67.59, with higher scores representing more FS. Previous validation studies found that the IMI possesses adequate internal consistency, good convergent and discriminant validity, and adequate temporal stability (Schmidt, Wagner, & Kiesler, 1999). In the current study, Cronbach's alphas for the FS vector ranged from .80 to .94.

Worry

To assess worry, clients completed the PSWQ (Meyer et al., 1990), which includes 16 items rated from 1 (*not at all typical of me*) to 5 (*very typical of me*). The PSWQ total score has a theoretical range of 16 to 80, with higher scores representing greater worry. The PSWQ possesses good internal consistency and test-retest reliability, as well as good concurrent, discriminant, and convergent validity (Brown, Antony, & Barlow, 1992; Meyer et al., 1990). In this study, the PSWQ total score demonstrated excellent internal

consistency across posttreatment and follow-up measurements (Cronbach's αs = .96 to .97).

PROCEDURE

See Westra et al. (2016) for a full description of the flow of participants through the trial. For variables pertinent to the present study, clients completed the IIP-C at baseline, and the PSWQ at baseline, posttreatment, and at 6- and 12-month follow up. The therapists completed the IMI after Sessions 1, 5, 9, 13, and 15. All study procedures (as well as the secondary analysis of the deidentified dataset) received institutional review board approval at the two data collection sites.

DATA ANALYSES

First, as per Constantino et al. (2018), we created our change in FS mediator variable by conducting a 2-level linear growth model with within-client change at level 1 and between client differences at level 2 (Raudenbush & Bryk, 2002). Although there was another level of nesting in the dataset (clients within therapists), we did not include therapists as a third level of analysis given Constantino et al.'s (2018) finding that therapists explained < 1% of the variability in change in FS across treatment. From the 2-level model, we output empirical Bayes (EB) estimates of the weekly rate of change in FS during treatment (see the Supplemental Material for a full description of the equation for this model). These EB estimates are weighted by their reliability; that is, when clients had missing IMI data, their change scores were weighted toward the group mean. This approach allows the model to generate estimates for all clients with at least one completed IMI measurement (thus, the full sample was retained for this variable). However, it is important to note that only 18% of clients had any missing IMI data. Regarding the other two measures used in this study, only 16% had any missing PSWQ data, and there were no missing baseline IIP data.

Second, to create our outcome variable, we followed the same approach as Westra et al. (2016) and residualized out the effects of the aforementioned variables that differed between the conditions at baseline; that is, as baseline motivation to change and medication status significantly varied both between treatment conditions and the site where the therapy was conducted, we first residualized out the effect of site on motivation to change and medication status. Then, we residualized out the effect of motivation and medication (with site now removed) on PSWQ scores. The subsequent analyses were conducted based on these residualized PSWQ scores.

Finally, for our primary analyses, we conducted a multilevel moderated mediation model (Preacher, Rucker, & Hayes, 2007) using the Mplus 8.1 program (Muthén & Muthén, 1998-2017). For this mediational analysis, we used the Bayesian estimator (Muthén & Asparouhov, 2012), as indirect effects are typically not normally distributed. Bayesian analysis does not assume normality and instead provides the entire distribution for estimates (known as posterior distributions), which allows for the generation of credible intervals based on these posterior distributions. A 95% credible interval (CI) indicates that there is a 95% chance that the interval contains the true estimate of the effect. Thus, a credible interval for an estimate that does not contain zero can be used as an approximation of a more traditional frequentist significance test.

As previous research on the Westra et al. (2016) trial has established that there were no therapist effects on worry, we fit a two-level model with repeated measures of worry (level 1) nested within clients (level 2). Specifically, this model tested an *upper level mediation* with the effect of a level-2 predictor (treatment condition; MI-CBT = 0; CBT = 1) on a level 1 outcome variable (worry) mediated by a level-2 variable (change in FS; i.e. 2 → 2 → 1 mediation; Bauer, Preacher, & Gil, 2006). Note that we focused solely on worry change during the follow-up period due to our interest in better understanding the differential treatment effect that emerged at this time in the main trial (but not over acute treatment; Westra et al., 2016). We also focused on follow-up to fulfill the methodological requirement of maintaining temporal precedence between the predictor, mediator, and outcome variable when testing mediation (Kraemer, Kiernan, Essex, & Kupfer, 2008).

Then, we incorporated another level-2 variable in the model (client's baseline interpersonal problems of agency) as a moderator of the *b* path of the mediation effect. In these analyses at level-1 (*within-client effects*), we estimated worry change during follow-up by regressing the PSWQ scores on time (in weeks), centered at the end of follow-up. Thus, this model estimated each client's weekly follow-up worry change (slope) and their worry level at 12 months (intercept). At level-2 (*between-client effects*), these variables dropped down to become outcome variables; that is, each client's follow-up worry change and worry level at 12-months were regressed on treatment condition (*c'* path), FS change (*b* path), baseline FS, baseline interpersonal problems of agency, and the interaction of change in FS and interpersonal problems of agency (*b* path moderator). Also at level-2, change in FS was

regressed on treatment condition (*a* path). Finally, to test the overall significance of the moderated mediational pathway, we calculated Indexes of Moderated Mediation (Hayes, 2015). These indexes were computed by multiplying the coefficient of the "a" path by the coefficients of the regression of client's follow-up worry change and worry level at 12-months on the interaction of the mediator (change in FS) and the "b" path moderator (interpersonal problems of agency). See the Online Supplement for the multilevel equations for this model.

Results

PRELIMINARY ANALYSES

Results of the multilevel FS model indicated that, on average, FS increased by 0.19 units per week ($p < .001$). Moreover, results indicated that clients significantly varied in their weekly change in FS, $u_{1j} = 0.07$; $\chi^2(76) = 189.41$, $p < .001$, suggesting that between-client differences in this change could explain variability in client outcomes. As noted, we output EB estimates representing each client's weekly FS change during treatment for use as our mediator variable in our primary analyses.

PRIMARY ANALYSES

Results of our multilevel moderated mediational analysis showed that treatment condition was significantly related to FS change during therapy ($\gamma_{11} = .08$, $SE = .03$, CI_{95} [0.02, 0.15]), with CBT clients experiencing a greater average increase in FS during treatment than MI-CBT clients. The main effects of change in FS during treatment on worry change across follow-up ($\gamma_{02} = 5.04$, $SE = 4.19$, CI_{95} [-3.27, 13.65]) and worry level at 12-months ($\gamma_{12} = -19.61$, $SE = 13.51$, CI_{95} [-47.72, 5.87]) were not significant, controlling for baseline problematic agency, the interactive effect of change in FS and agency, and treatment group. Similarly, the main effect of baseline agency on worry change ($\gamma_{03} = 0.70$, $SE = 0.39$, CI_{95} [-0.02, 1.48]) and 12-month worry ($\gamma_{03} = -0.41$, $SE = 0.33$, CI_{95} [-1.05, 0.21]) were not significant, controlling for change in FS, the interactive effect of change in FS and agency, and treatment group.

However, as expected, we found that baseline agency significantly moderated the effect of change in FS on long-term worry change ($\gamma_{14} = -3.37$, $SE = 1.60$, CI_{95} [-6.55, -0.26]). See Figure 1 for a graphical depiction of all paths in this moderated mediation model. Further, the index of moderated mediational testing the extent to which the effect of treatment on follow-up worry change through change in FS varied as a function of baseline problems of agency was significant ($\beta = -0.24$, $SE = 0.18$, CI_{95} [-0.68, -0.01]). As depicted in Figure 2, for more problematically under agentic clients (1 SD below the grand mean of agency), increased FS was associated with *increased* worry during follow-up, whereas for problematically over agentic clients (1 SDs above the grand mean of agency), increased FS was associated with reduced worry.

To further understand this finding, we calculated simple slopes and the region of significance for a three-way interaction (time x FS x agency) in a hierarchical linear model, using Preacher, Curran, and Bauer's (2006) online calculator. The results of the regions of significance analysis revealed that clients who were 1 SD above the mean in agency (problematically over agentic) experienced significant worry *reduction* when they evidenced a during-treatment weekly rate of FS increase that was between 0.01 and 0.47 units. Clients who were 1 SD below the agency mean (problematically under agentic) experienced no change in worry, or

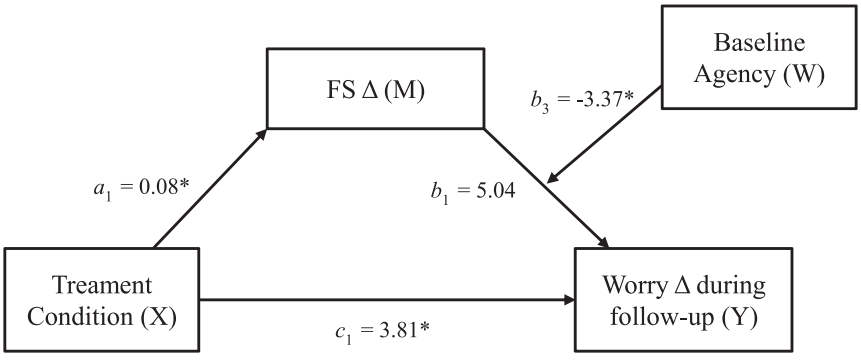

FIGURE 1 Moderated mediational effects of treatment (MI-CBT = 0, CBT = 1; X) on worry change across follow-up (Y) through weekly changes in FS (M), with the effect of change in FS moderated by clients' baseline agentic interpersonal problems (W).
Note. FS = Friendly-submissiveness; Δ = Change
* Bayesian 95% credible interval does not include zero.

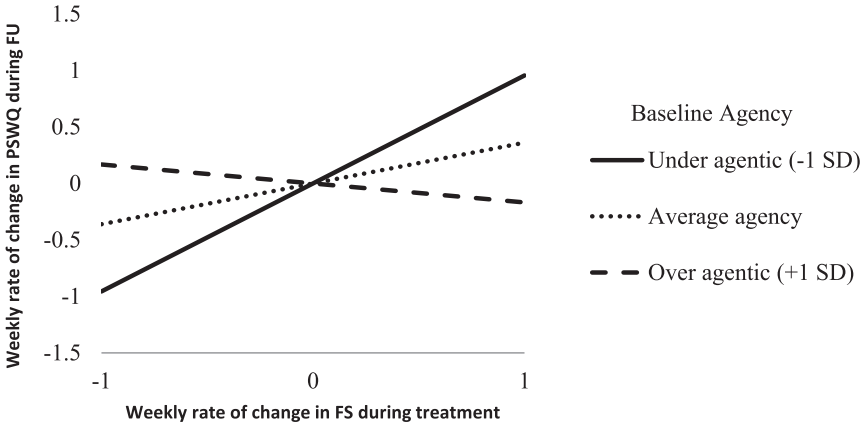

FIGURE 2 Effects of the weekly changes in FS during treatment on the weekly rate of change in worry across follow-up, moderated by client's baseline agency. *Over agentic* and *under agentic* interpersonal problems were defined as ± 1 *SD* (2.32) from the sample's agency *M* (-3.59) at baseline.

Note. PSWQ = residualized scores from the *Penn State Worry Questionnaire*; FS = IMI friendly submissiveness scores; FU = follow-up.

an increase in worry, when their weekly rate of FS increase was within the range of 0.27 to 3.57 units. These under agentic clients only experienced significant worry *reduction* when they evidenced weekly reductions in FS or just a small weekly increase in FS (up to 0.27 units). These findings support our hypothesis that greater increases in FS will be beneficial for over agentic clients, whereas reductions or just small increases in FS will be beneficial for clients who are under agentic.

In contrast, the change in FS by agentic interpersonal problems interactive effect did not significantly predict 12-month worry level (γ_{04} = -6.42, *SE* = 5.03, CI_{95} [-16.49, 3.51]). Additionally, the index of moderated mediation was not significant (β = -0.47, *SE* = 0.52, CI_{95} [-1.82, 0.30]). Finally, when controlling for change in FS, initial FS level, baseline agency, and the interactive effect of change in FS and agency, there was still a significant effect of treatment; that is, MI-CBT vs. CBT clients experienced greater worry reduction across follow-up (γ_{11} = 3.81, *SE* = 1.44, CI_{95} [0.84, 6.60]) and had lower 12-month worry (γ_{01} = 11.24, *SE* = 4.33, CI_{95} [2.71, 19.06]). Supplemental Table 1 presents all parameters estimated in this model.

Discussion

We tested whether GAD clients' baseline interpersonal agency problems moderated the indirect effect of treatment on long-term worry through during-treatment changes in clients' FS impacts on their therapist. As prior research had already established (Constantino et al., 2018), CBT vs. MI-CBT clients experienced greater increases in FS. However, the present study demonstrated that for over agentic clients, greater increases in FS (again, as facilitated more by CBT than MI-CBT) related to *decreased* worry across follow up, whereas for under agentic clients, greater increases in FS (again, as facilitated more by CBT than MI-CBT) related to *increased* worry across 12-month follow up. However, this moderated indirect effect was not replicated for endpoint worry level at the 12-month assessment. Although speculative, it is possible that the *rates* of change in worry associated with the moderated mediation effect are relatively slow (compared to, for example, what one might see during treatment when a therapist is actively trying to reduce clients' worry), and that a longer-term follow-up period would have been needed to detect a significant moderated mediation effect on final worry *level*.

This potential design limitation notwithstanding these results shed further light on the clients with GAD for whom CBT, through its candidate change mechanism of increased FS, might be more or less beneficial. It is plausible, and perhaps even likely, that for overly agentic persons who may be accustomed to dominating others and who usually tend to be distrusting in their relationships (Gurtman, 1992; Horowitz, 2004), learning to trust and rely on another's direction over the course of treatment might represent a novel and corrective relational experience (Constantino & Westra, 2012). Over time, clients' increased trust and reliance on the CBT therapist's direction might not only result in lowered worry, but could also translate to a reduced need to get their interpersonal needs met through domineering behavior. If this experience in therapy is salient enough, it might even translate to other relationships outside of therapy, which could improve the balance

in, and quality of, such relationships (Coyne et al., 2018). Such improved relational quality could even become a protective factor against the recurrence of GAD symptoms.

On the other hand, for under agentic clients, increased FS (as facilitated by CBT) may be more harmful than helpful. For these individuals, becoming more deferent to the directive CBT therapist might unintentionally infix, or even worsen, their characteristic excessive submissiveness (Horowitz, 2004). Given the link between this type of interpersonal problem and the etiology and maintenance of GAD symptomatology (Borkovec et al., 2002; Newman et al., 2008), it might also contribute to increased worry over the long term.

Thus, consistent with previous findings (Gomez Penedo et al., 2017), overly submissive clients may benefit from the autonomy-granting nature of MI. Specifically, when the MI-CBT therapist empathically supports and validates clients' self-efficacy and experience, especially when they take an atypical risk to resist the treatment's direction, under agentic clients may begin to take more agency in this safe and trustworthy dyad. Over time, this exchange could become a different type of novel, corrective experience (Constantino & Westra, 2012; Westra & Constantino, in press); in this case, learning that the MI-CBT therapist (a new important other) values and encourages the client's assertiveness could reduce his or her pathological deference. Eventually, such changes could translate to other relationships outside of therapy (Newman et al., 2008; Wachtel, 2014), thereby lowering this GAD risk factor and facilitating long-term worry reduction and durability of treatment gain.

Additionally, it is worth noting that although the present results suggest potential benefits of therapist responsivity to both over and under agentic clients, for the present sample, it appears *most* important that therapists do not unintentionally recapitulate a pattern of dominance with an overly submissive client. In other words, the beneficial impact of MI-CBT vs. CBT for clients with problematic low agency was more pronounced than the beneficial impact of CBT vs. MI-CBT for overly agentic clients. Given that the present sample tended to be very under agentic on average, it is possible that the beneficial impact of CBT vs. MI-CBT for overly agentic clients would have been more pronounced had our sample included more clients with truly problematic high agency (rather than clients who simply had *less* problematic low agency). Future research will need to test this possibility in other samples with greater variability in presenting client agency.

Clinically, the present results may have implications for systematic treatment selection for clients with GAD based on their particular interpersonal features (Beutler, Someah, Kimpara, & Miller, 2016). Such decision-making would fit with the call for a more *personalized medicine* in evidence-based mental health care in general (DeRubeis et al., 2014), and for GAD clients specifically (Etchebarne, Juan, & Roussos, 2016). Moreover, the identification of baseline interpersonal problems as an empirically supported marker for treatment assignment fits with an evidence-based responsiveness model known as *context-responsive psychotherapy integration* (Constantino, Boswell, Bernecker, & Castonguay, 2013). This model proposes an if/then approach whereby treatment adaptations are prompted by the presence of empirically supported markers or contexts. In the present case, *if* GAD clients have baseline problems of being overly agentic, *then* standard CBT may lead to interpersonal experiences that help reduce these problems, which in turn facilitates long-term worry reduction. In contrast, *if* GAD clients present with baseline problems of being under agentic, *then* integrating MI into CBT may help foster beneficial reductions in submissiveness, which in turn facilitates long-term worry reduction.

Moreover, once treatment begins (after personalized assignment), therapists can monitor clients' interpersonal behaviors, such as with the IMI, and draw on our present region of significance analyses to inform further responsiveness. For example, suppose a client presents as problematically over agentic, and a therapist proceeds to administer standard CBT. If upon tracking FS change during treatment the client experiences a moderate increase in FS, then the clinician may be wise to stay the CBT course (as our data would suggest that this client is on track for long-term worry reduction). However, if the client experiences either any reduction in FS (a movement consistent with their problematically over agentic style) or a very large increase in FS (perhaps too extreme of a movement to the other end of the problematic agency spectrum), then the therapist may be wise to alter their treatment course to address the client's interpersonal patterns that are posing risk for long-term nonresponse or harm.

On the other hand, suppose a client presents as problematically under agentic, and a therapist proceeds to administer integrative MI-CBT. If upon tracking FS change during treatment the client experiences any decrease in FS, or FS remains relatively stable, then the clinician may be wise to stay this integrative course (as our data would suggest that this client is on track for long-term worry reduction). However, if the client experiences an increase in FS beyond the "cut-point" we found in the region of significance analyses, then the therapist may be wise to alter their approach, such as by employing

other strategies that might encourage the client's assertiveness and reduce his submissiveness.

The present study had several limitations. First, clients' during-therapy interpersonal behavior was not measured directly, but rather inferred through complementarity theory. Thus, there might be bias in therapist ratings associated, for example, with social desirability or acquiescence. Further studies might benefit from using an observer-coding system to evaluate interpersonal processes and complementarity in client and therapist dyads. Such a method could yield a more detailed picture of the psychotherapy interaction, clients' interpersonal changes over time, and how these processes relate to treatment characteristics, process variables, and therapeutic change. Second, we did not measure therapist interpersonal style. Relatedly, although we assumed that CBT was more directive than MI-CBT, we did not include an empirical measure of such directiveness in our analyses. However, it is worth noting that, based on adherence coding (using observer-based measures that assess inherent differences in agenda-driven/directive actions [CBT] vs. client-centered stances [MI]), CBT therapists were significantly more directive than MI-CBT therapists throughout treatment. Third, the results were based on random assignment of participants to treatment condition. To fully substantiate the hypothesis that assigning clients to treatment (CBT or MI-CBT) based on their presenting interpersonal difficulties would improve clinical outcomes, experimental trials for which such an assignment process is implemented are needed. Fourth, the relatively small number of therapists (N = 21) could have limited our ability to detect meaningful therapist effects on both the mediator (change in FS) and the outcome (worry change). Fifth, this study's primary research question was based on the results of other studies that used the same dataset, which implies a risk of sample-specific results that could have a limited generalization to the broader population of clients with GAD. Future research should replicate these findings in new samples of GAD clients treated with CBT vs. MI-CBT. Finally, as mentioned above, the moderated mediation effect was not significant for worry *level* at 12-months. Although speculative, it is possible that the follow-up rate of change in worry is relatively slow (compared to the rates of symptom change observed during acute treatment), so it may take more time for between-group differences in worry level to emerge (i.e., beyond 12-months posttreatment). Therefore, future research should evaluate worry change over a more prolonged follow-up period.

Beyond these limitations, this study provides further evidence about the ways in which specific interpersonal processes during therapy can be more or less beneficial (or perhaps even harmful) based on a client's specific presenting interpersonal problem. Thus, it represents one humble step toward answering Gordan Paul's iconic question for psychotherapy process research: "*What treatment, by whom, is most effective for this individual with that specific problem, and under which set of circumstances?*" (Paul, 1967, p. 11).

Conflict of Interest Statement

The authors declare that there are no conflicts of interest.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.beth.2019.01.007.

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Received: September 30, 2018
Accepted: January 30, 2019
Available online: February 10, 2019