

British Journal of Clinical Psychology (2013), 52, 129–147  
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The British  
Psychological Society

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## Interpersonal problems across anxiety, depression, and eating disorders: A transdiagnostic examination

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**Objectives.** Integrative models of psychopathology suggest that quality of interpersonal relationships is a key determinant of psychological well-being. However, there is a relative paucity of research evaluating the association between interpersonal problems and psychopathology within cognitive behavioural therapy. Partly, this may be due to lack of brief, well-validated, and easily interpretable measures of interpersonal problems that can be used within clinical settings. The aim of the present study was to evaluate the psychometric properties, factor invariance, and external validity of the Inventory of Interpersonal Problems 32 (IIP-32) across anxiety, depression, and eating disorders.

**Methods.** Two treatment-seeking samples with principal anxiety and depressive disorders (AD sample,  $n = 504$ ) and eating disorders (ED sample,  $n = 339$ ) completed the IIP-32 along with measures of anxiety, depression, and eating disorder symptoms, as well as quality of life (QoL).

**Results.** The previously established eight-factor structure of the IIP-32 provided the best fit for both the AD and ED groups, and was robustly invariant across the two samples. The IIP-32 also demonstrated excellent external validity against well-validated measures of anxiety, depression, and eating disorder symptoms, as well as QoL.

**Conclusion.** The IIP-32 provides a clinically useful measure of interpersonal problems across emotional and ED.

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## Practitioner Points

- The IIP-32 is a brief, valid, internally reliable, and clinically useful measure of interpersonal problems for clients with anxiety, depression, and eating disorders.
- Difficulty being sociable and a tendency to subjugate oneself by prioritizing others' needs were consistently associated with more severe anxiety, depression, and eating disorders symptoms, as well as poorer quality of life.
- The IIP-32 may be a useful measure of interpersonal problems to guide individualized case formulations.

## Cautions/Limitations

- A cross-sectional and correlational design precluded causal conclusions.
- Numerous versions of the IIP have been developed. Our findings with the IIP-32 require replication.
- Some anxiety and depression diagnoses were underrepresented, and the eating disorders sample was predominantly comprised of women.

Early integrative models of psychopathology suggest that functional interpersonal relationships play an important role in psychological well-being and, conversely, that interpersonal problems are causally implicated in the development and maintenance of psychopathology (Leary, 1957; Sullivan, 1953). However, interpersonal problems are infrequently considered in cognitive behaviour therapy (CBT) research (Haynes & O'Brien, 2000), with the emphasis instead being on cognitive, emotional, and behavioural symptomatology (Froyd, Lambert, & Froyd, 1996; Hatfield & Ogles, 2004). Although understanding and investigating changes in symptomatology is integral to psychotherapy, focusing solely on symptoms ignores a range of other factors known to influence psychological well-being and quality of life (QoL).

Interpersonal problems are associated with many psychological difficulties, including generalized anxiety disorder (GAD, Borkovec, Newman, Pincus, & Lytle, 2002; Eng & Heimberg, 2006), depression (Vittengl, Clark, & Jarrett, 2003; Petty, Sachs-Ericsson, & Joiner, 2004), and eating disorders (Fairburn, Cooper, & Shafran, 2003; Hartmann, Zeeck, & Barrett, 2010; Hopwood, Clarke, & Perez, 2007). Recognizing the importance of accounting for interpersonal functioning in understanding psychological well-being, Horowitz and colleagues developed the Inventory of Interpersonal Problems (IIP). The IIP measures a range of interpersonal problems potentially experienced by individuals seeking psychological help (Horowitz, Rosenberg, Baer, Ureno, & Villasenor, 1988). The original IIP consisted of 127 items, divided into items beginning with 'I find it hard to...' and items beginning with 'I do too much...' In the original publication of the IIP, a factor analysis identified six scales: Hard to be Assertive; Hard to be Sociable; Hard to be Intimate; Hard to be Submissive; Too Responsible; and Too Controlling (Horowitz *et al.*, 1988). This factor analysis was considered problematic for various reasons. Firstly, there were fewer participants than items. Secondly, an Eigenvalue of three was arbitrarily used for factor selection, which may have resulted in selection of too few factors. Thirdly, the sample was considered unrepresentative as 86% of participants were women. Further research addressing these limitations identified an eight factor structure: Hard to be sociable; Hard to be assertive; Too aggressive; Too open; Too caring; Hard to be supportive; Hard to be involved and Too dependent (Barkham, Hardy, & Startup, 1994).

The IIP was readily adopted by many researchers, but it has not typically been used in its original form. Instead, a range of more than 10 derivatives of the original IIP have been published and utilized in research (Hughes & Barkham, 2005). These derivative forms of the IIP can be distinguished as variants that favour one of two analytical approaches. One variant follows Leary's (1957) circumplex model of personality (e.g., the IIP-C; Alden, Wiggins, & Pincus, 1990; Horowitz, Alden, Wiggins, & Pincus, 2000) whereas others favour a factor-analytic approach (e.g., the IIP-32; Barkham, Hardy, & Startup, 1996). Although there are some common items between the various IIP derivatives, the differences in analytical approaches make comparisons between studies using different version of the IIP difficult. The limited comparability between studies makes it difficult to clearly understand the influence of interpersonal problems on psychopathology and psychotherapy.

In clinical settings, it is useful for measures to be brief and readily interpretable and applicable to clinicians (Hatfield & Ogles, 2007). Creating an IIP profile using circumplex analysis is more complicated than calculating scale scores, and the resulting profile is less easily interpreted. As such, factor analytical versions of the IIP may be more useful than circumplex versions in clinical settings. It is also desirable for clinical research measures to have published norms, to allow scores to be more meaningfully interpreted (Kendall, Marrs-Garcia, Nath, & Sheldrick, 1999). As the length of the 127 item IIP is prohibitive in many in clinical settings, the IIP-32 (Barkham *et al.*, 1996) was developed. The IIP-32 is a 32-item measure, with items selected to represent the eight scales identified in the original version of the IIP (Barkham *et al.*, 1994). As the IIP-32 is briefer, more easily scored and interpreted, and has published norms (Barkham *et al.*, 1996), it has great potential for use within clinical settings. However, there have been no published attempts to replicate this factor structure, and there has been little published validation of the IIP-32 against other measures (Hughes & Barkham, 2005).

It is important to distinguish the IIP-32 from another 32-item variant of the IIP, the IIP-Short Circumplex (IIP-SC; Soldz, Budman, Demby, & Merry, 1995). The IIP-SC is comprised of a 32-item subset of the 64-item IIP-C (Circumplex Form; Alden *et al.*, 1990). Although this short circumplex variant was originally published as the IIP-SC a subsequent manual referred to it as the IIP-32 (Horowitz *et al.*, 2000; see also Haggerty, Blake, Naraine, Siefert, & Blais, 2010; Lo Coco, Gullo, Scrima, & Bruno, 2011). The distinction between the IIP-32 (Barkham *et al.*, 1996) and the IIP-SC (Soldz *et al.*, 1995) is significant as these variants share only 13 of 32 items, and items were derived using different analytical approaches.

The brevity and breadth of the IIP-32 suggest that it may be particularly useful within clinical settings; however, confirmation of its factor structure and further evidence of validity is required. The present study aims to determine the reliability and factor invariance of the eight-factor structure of the IIP-32 in two samples presenting for treatment at a community clinic; one with principal anxiety and/or depressive disorders (AD sample) and the other with principal eating disorders (ED sample). In addition, this study aims to evaluate the external validity of the IIP-32 by examining its associations with core symptoms of anxiety, depression, and eating disorders, as well as QoL. It was expected that the factor structure would replicate and be invariant across both samples. It was further expected that the subscales would be positively associated with symptom measures and negatively associated with QoL.

## Method

### Participants

Participants ( $N = 843$ , 78.4% women) were referred to a specialist mental health clinic by health practitioners for anxiety, depressive, or eating disorders with a mean age of 32.06 years ( $SD = 12.71$ , Range = 16–73). The clinic offers two programmes: one treating anxiety and depressive disorders and the other treating eating disorders. A total of 504 patients (65% women) were drawn from the anxiety and depression (AD) programme, with a mean age of 36.42 ( $SD = 13.05$ ). Diagnostic and Statistical Manual of Mental Disorders (DSM-IV, American Psychiatric Association, 2000) diagnoses were assessed using the Mini International Neuropsychiatric Interview (MINI, Lecrubier *et al.*, 1997; Sheehan *et al.*, 1997a,b, 1998). Principal diagnoses included major depressive disorder (55.3%), social phobia (15.7%), GAD (11.5%), dysthymia (8.1%), panic disorder with or without agoraphobia (6.1%), specific phobias (1.3%), hypochondriasis (.9%), obsessive compulsive disorder (.7%), and post-traumatic stress disorder (.4%). The most common comorbid disorders included GAD (29.8%), social phobia (24.6%), dysthymia (17%), major depressive disorder (13.4%), and panic disorder with or without agoraphobia (8.0%). Most were born in Australia (68.1%), followed by Europe/United Kingdom (18.6%), Asia (5.1%), New Zealand (1.6%), North America (1.6%), South America (1.0%), and Other (4.0%). Around half (51.1%) were employed, 46.1% were single, 36.5% were married or in a live-in relationship, 16.4% were separated or divorced, and 1.0% were widowed. Most (66.9%) completed high school, 23.1% had a trade qualification, and 29.9% had a tertiary education. Most (72.0%) reported taking medication for their presenting problem.

A total of 339 patients (98.2% women) were drawn from the eating disorders (ED) programme, with a mean age of 25.65 ( $SD = 8.93$ ). Principal disorders included anorexia nervosa (AN) (16.4%), bulimia nervosa (BN) (41.5%), and Eating Disorder Not Otherwise Specified (EDNOS) (42.1%). The most common comorbid disorders were major depressive disorder (45.5%), GAD (27.0%), social phobia (15.0%), dysthymia (14.6%), and panic disorder (4.4%). Most were born in Australia (80.4%), followed by Europe or the United Kingdom (10.1%), Asia (1.8%), North America (1.5%), New Zealand (1.2%), South America (.3%) and Other (4.7%). Around half were employed (55.8%), 65.2% were single, 10.1% were married or in a live-in relationship, 4.2% were separated or divorced, and .6% were widowed. Almost half had completed high school (42.5%), 18.6% had a trade qualification, and 23.6% had a tertiary education. Around half (53.0%) reported taking medication for their presenting problem.

### Measures

#### *Inventory of Interpersonal Problems-32 (IIP-32, Barkham et al., 1996)*

The IIP-32 is a 32-item measure with eight subscales reflecting different interpersonal problems. The IIP-32 subscales have demonstrated adequate internal consistency in outpatient and non-clinical samples (Barkham *et al.*, 1996). Cronbach's alphas for each scale demonstrated acceptable to excellent internal reliability for each subscale: Hard to be (H) sociable (.90), H assertive (.83), H involved (.78), H supportive (.81), Too (T) open (.79), T caring (.73), T aggressive (.86), T dependent (.68). Limited validity data are available, but the IIP-32 has been associated with some aspects of eating disorder pathology (Lampard, Byrne, McLean, & Fursland, 2011).

*Beck Anxiety Inventory (BAI; Beck, Epstein, Brown, & Steer, 1988)*

The BAI consists of 21 items measuring the severity of anxiety symptoms over the previous week. Reliability and validity are established; internal consistency coefficients range from .85 to .94, with a 1-week test-retest reliability coefficient of .75 (Beck *et al.*, 1988). Cronbach's alpha in the current study was .92.

*Beck Depression Inventory (BDI-II; Beck, Steer, & Brown, 1996)*

The BDI-II is a 21-item measure of depression symptoms experienced during the previous fortnight. Internal consistency ( $\alpha = .92$ ) and test-retest reliability ( $r = .93$  over 1 week) are established (Beck *et al.*, 1996), and evidence for construct validity has been demonstrated (e.g., Dozois, Dobson, & Ahnberg, 1998; Osman, Kopper, Barrios, Gutierrez, & Bagge, 2004). Support for convergent and discriminant validity has also been reported (Steer, Ball, Ranieri, & Beck, 1997). Cronbach's alpha in the current study was .91.

*Depression, Anxiety, Stress Scales (DASS, Lovibond & Lovibond, 1995)*

The DASS is a 42-item self-report measure, which assesses the presence of depression (DASS-D), anxiety (DASS-A), and stress symptoms. The DASS was used to measure depression and anxiety symptoms within the eating disorders sample. The DASS has good construct validity and internal reliability in clinical and community samples (Antony, Bieling, Cox, Enns, & Swinson, 1998). Cronbach's alphas for the Depression and Anxiety subscales in the ED sample in this study were .92 and .80 respectively.

*Eating Disorders Examination-Questionnaire (EDE-Q, Fairburn & Beglin, 1994)*

The EDE-Q is a self-report version of the clinician-administered Eating Disorder Examination and assesses eating disorder-related behaviours and attitudes for the preceding 28 days, including the frequency of key behaviours such as binge eating, self-induced vomiting, and driven exercise. It has a global score and four subscales: eating concern, dietary restraint, shape concern, and weight concern. Substantial reliability and validity data have been reported for the EDE-Q (Luce & Crowther, 1999; Mond, Hay, Rodgers, Owen, & Beumont, 2004a,b). Cronbach's alpha for the EDE-Q global score in this study was .71.

*Quality of Life Enjoyment and Satisfaction Questionnaire – Short form (Q-LES-Q, Endicott, Nee, Harrison, & Blumenthal, 1993)*

The Q-LES-Q short form is a 14-item self-report instrument deriving from the General Activities Scale of the original 93-item Q-LES-Q. The Q-LES-Q short form includes items on various areas of daily functioning such as work, physical health, social relationships, family relationships, ability to function in daily life, and overall well-being. The total score is the sum of items expressed as a percentage of the maximum score, with lower scores indicating poorer QoL. The Q-LES-Q short form has good test-retest reliability, internal consistency, and construct and criterion validity (Rapaport, Clary, Fayyad, & Endicott, 2005; Ritsner, Kurs, Kostizky, Ponizovsky, & Modai, 2002). The scale explains variance beyond that accounted for by symptom scales (Hope, Page, & Hooke, 2009). Cronbach's alpha in the current study was .88.

## Procedure

Participants were referred by health professionals. As part of the standard admission protocol all patients completed the IIP-32 and Q-LES-Q prior to their assessment. Patients referred for anxiety and depressive disorders also completed the BDI-II and BAI, and those referred for an eating disorder completed the EDE-Q and DASS. The MINI was completed at the initial assessment session. The process of receiving informed written consent to use patients' data for research purposes was approved by the Hospital's Ethics Board.

## Results

### **Confirmatory factor analyses of the IIP-32 in the AD and ED samples**

MPlus (Muthén & Muthén, 2010) was used to test the factor structure of the IIP and its invariance in the AD and ED samples. Models were tested using Weighted Least Squares estimation, due to the response options being ordinal data. Model testing began with a one factor model, which assumed that all items loaded onto a single 'interpersonal' factor. The second model tested was a four-factor model in which the IIP bipolar scales were combined (see Barkham *et al.*, 1996). A 'Problems with Competition' factor was created by combining the two-four-item IIP subscales of 'Hard to be Assertive' and 'Too aggressive', a 'Problems with Socialising' factor was derived from the 'Hard to be Sociable' and 'Too Open' subscales, a Problems with Nurturance' factor was created from the 'Hard to be Supportive' and 'Too Caring' sub-scales, and a 'Problems with Independence' factor was generated from the 'Hard to be Involved' and 'Too Dependent' sub-scales. The third model tested was an eight-factor model in which each of the latent variables were 'Hard to be Assertive,' 'Too aggressive,' 'Hard to be Sociable,' 'Too Open,' 'Hard to be Supportive,' 'Too Caring,' 'Hard to be Involved,' and 'Too Dependent.' A final model was tested in which modification indices of the eight-factor model were examined to determine if a case could be made to improve the fit by correlating errors of any items. No further attempt was made to improve fit by allowing items to cross-load to another latent variable or by removing items because the goal of the present study was to examine the properties of the published version of IIP-32. Each of these models was tested in the AD sample first and then in the ED sample. As the analyses in the two samples were comparable, they are reported simultaneously.

As expected, the one-factor model did not fit the observed data well, with Comparative Fit Indices (CFI) of .451 and .473 for the AD and ED samples respectively. The four-factor model led to a significantly better fit ( $\chi^2$  Change (6) = 843.185;  $p < .001$ , and  $\chi^2$  Change (6) = 1293.562;  $p < .001$ ), but still the CFI was below .70 for both samples (see Table 1). The Weighted Mean Square of Residuals (WMSR) was 4.377 and 3.775 for the AD and ED samples, respectively, suggesting that there was systematic variance still unexplained by the four-factor model. The eight-factor model led to substantially better fit for both the samples ( $\chi^2$  Change (22) = 1463.357;  $p < .001$ , and  $\chi^2$  Change (22) = 1034.768;  $p < .001$ ). An examination of the modification indices revealed that the errors of two pairs of items were particularly highly correlated. An examination of the content of these items revealed that these items probably shared variance due to the similarity of content. That is, on the *Too Aggressive* subscale 'I argue with other people too much' and 'I fight with other people too much' both referred to physical acts of aggression. On the *Too Open* subscale, the items 'I open up to people too much' and 'I tell personal things to other people' are reverse scored and concern acting in an extreme manner that was not shared by the remaining items on the subscale (e.g., 'hard to tell personal things to other people').

**Table 1.** Confirmatory factor analysis results for IIP-32 in the AD and ED samples

Model	df	$\chi^2$	CFI	TLI	RMSEA	WMSR
One Factor						
AD Sample	464	8482.318	.451	.413	.185	4.929
ED Sample	464	6618.821	.473	.436	.198	4.376
Four Factor						
AD Sample	458	6620.986	.578	.543	.163	4.377
ED Sample	458	4735.250	.634	.603	.166	3.775
Eight Factor						
AD Sample	436	3127.527	.816	.790	.111	2.449
ED sample	436	2417.744	.830	.807	.116	2.155
Eight Factor with Correlated Errors						
AD Sample	434	2367.117	.868	.819	.094	2.068
ED Sample	434	1579.160	.902	.888	.088	1.673

Note. IIP-32 = Inventory of Interpersonal Problems – 32; AD = anxiety and depression; ED = eating disorders; df = degrees of freedom; CFI = comparative fit index; TLI = Tucker–Lewis index; RMSEA = root mean square error of approximation; WMSR = weighted mean square of residuals.

Consequently, the error variances of these two items were permitted to correlate. This minimal change led to an improved fit ( $\chi^2$  Change (2) = 191.690;  $p < .001$ , and  $\chi^2$  Change (2) = 185.925;  $p < .001$ ), and the resulting model suggested that the eight-factor structure of the IIP-32 did provide a good description of the responses in both these samples. The CFIs were .868 and .902 for the AD and ED samples, respectively, suggesting that there was a good fit between the eight-factor model and the observed data. The Root Mean Square Error of Approximations (RMSEA) for both samples were still higher than the desired .05, but both were less than .10; thereby indicting that some systematic residual variance was unexplained. Consistent with the RMSEA, the relatively better WMSRs for the final model were much improved on preceding models, but did indicate that there was some systematic variance unexplained by the model. However, the purpose of the present investigation was to test the factor structure proposed for the IIP-32, and therefore analyses stopped at the point at which we were able to demonstrate a reasonable fit between the model and the data.

### **Factor invariance across the AD versus ED samples**

The next question was whether or not the final eight-factor model (with correlated errors) was invariant across the two samples. Thus, the preceding analyses were taken as evidence of configural invariance and a simultaneous test was conducted, which suggested a good fit,  $\chi^2(876) = 2357.842$ ;  $p < .001$ . The Comparative Fit Index (CFI = .877; Tucker–Lewis Index, TLI = .861) and the Root Mean Square Error of Approximation (RMSEA = .063) were also consistent with a good level of fit. Thus, the next step was to test metric invariance by constraining the factor coefficients to be equal across the two samples. No difference was found between the two samples ( $\chi^2$  Change (32) = 78.056;  $p = ns$ ) indicating that the factor structure was similar for people with anxiety and/or depression and those with eating disorders. Finally, scalar invariance was examined by testing whether or not the intercepts of the regressions of items on the same latent variable were equivalent across samples. Again, there was no evidence of sample differences ( $\chi^2$  Change (56) = 183.707;  $p = ns$ ). Thus, the conclusion across these

analyses was that the measurement model was comparable across the two samples tested and therefore, the variables measured by the IIP-32 relate to the latent variables in the same way for the different samples.

### **Associations with IIP scales for the AD and ED samples**

Pearson bivariate correlation coefficients between IIP-32 subscale and symptom measures were calculated for the AD and ED samples separately (Table 2). For the AD sample, all subscales were significantly and positively correlated with the BDI-II and BAI, and negatively with the Q-LES-Q. The only exception was the T open subscale, which did not significantly correlate with the BDI-II, BAI, or the Q-LES-Q. For the ED sample, all subscales were significantly and positively correlated with DASS-D, DASS-A, and EDE-Q, and negatively with the Q-LES-Q, the only exception being that the T open scale did not significantly correlate with DASS-A. Significant ( $p < .05$ ) correlations ranged from small (.09) to moderate (.55).

### **Multiple linear regression analyses: Unique predictors of symptoms**

The large number of correlations inflated the risk of Type I error so a series of hierarchical MLR analyses were conducted where symptom measures were regressed on all IIP-32 subscales. Age and gender were included in the first step for the AD sample, whereas only age was included in the first step for the ED sample (given that this sample comprised almost entirely of women). All IIP-32 scales were included in the second step for both samples. All associations were positive for depression, anxiety, and eating disorder symptoms, such that higher scores on IIP-32 subscales were associated with more symptoms. In contrast, all associations were negative with the Q-LES-Q, such that higher scores on IIP-32 scales were associated with poorer QoL (Tables 3 and 4).

Table 5 provides a summary of the IIP-32 subscales that provided unique explanatory power for each of the measures for both samples. The H sociable, T aggressive, and T caring subscales were consistent predictors of anxiety and depression symptoms across both samples. The H assertive, T open, H supportive, and T dependent subscales provided no explanatory power for depression or anxiety symptoms for either sample. The only inconsistency across the samples for anxiety and depression symptoms was the H involved subscale, which predicted both anxiety and depression in the ED sample, but predicted neither symptom in the AD sample.

H sociable and T caring subscales predicted Q-LES-Q scores in both samples, whereas H assertive, T open, and T dependent did not predict Q-LES-Q scores in either sample. T aggressive and H involved only predicted the Q-LES-Q in the AD sample, and H supportive only predicted the Q-LES-Q in the ED sample. Eating disorder symptoms were only uniquely predicted by the H sociable, T caring, and T dependent subscales.

### **Normative and sample comparisons across the IIP-32 subscales**

Cohen's  $d$ s were calculated to determinate the magnitude of the differences between means in this study (Table 6) and those found in Barkham *et al.*'s (1996) general population sample using the formula  $(\text{mean } 1 - \text{mean } 2)/\text{pooled standard deviation}$ . For the AD sample, the effect sizes were as follows: H assertive (1.01), H sociable (1.20), H supportive (.94), T caring (.37), T dependent (1.12), T aggressive (.17), H involved (.72), and T open (.14). For the ED sample, the effect sizes were: H assertive (.54), H sociable



**Table 2.** Pearson bivariate correlations between symptom measures and IIP-32 subscales for the AD and ED samples

	IIP total	H sociable	H assertive	T aggressive	T open	T caring	H supportive	H involved	T dependent
<b>AD Sample</b>									
BDI-II (457)	.47***	.35***	.23***	.34***	-.06	.33***	.16**	.27***	.31***
BAI (450)	.27***	.18***	.09*	.27***	-.07	.17***	.12**	.17**	.20***
Q-LES-Q (486)	-.42***	-.34***	-.19***	-.27***	.05	-.20***	-.23***	-.34***	-.17***
<b>ED Sample</b>									
DASS-D (334)	.60***	.54***	.36***	.31***	-.15**	.29***	.30***	.45***	.34***
DASS-A (334)	.59***	.40***	.31***	.36***	-.12	.37***	.30***	.45***	.36***
EDE-Q (334)	.45***	.34***	.24***	.21***	-.17**	.29***	.18**	.30***	.35***
Q-LES-Q (327)	-.54***	-.55***	-.25***	-.29***	-.18**	-.23***	-.31***	-.38***	-.32***

Note. Numbers in parentheses = number of patients with data for each measure. AD = anxiety and depression; ED = eating disorders; IIP = Inventory of Interpersonal Problems; H = hard to be; T = too; BDI-II = Beck Depression Inventory; BAI = Beck Anxiety Inventory; Q-LES-Q = Quality of Life Enjoyment and Satisfaction Questionnaire; DASS = Depression Anxiety and Stress Scale; DASS-D = depression subscale; DASS-A = anxiety subscale; EDE-Q = Eating Disorder Examination Questionnaire global score.

\* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

**Table 3.** Hierarchical multiple linear regression analyses with IIP-32 subscales predicting symptom measures for the AD sample

R <sup>2</sup>	Criterion	Step	Predictors	Statistics					
				B	SE B	$\beta$	t	p	Part r
.02*	BDI-II	1	Age	-.08	.04	-.09	-1.87	.06	-.09
			Gender	-2.67	1.15	-.11	-2.32	.02	-.11
.27**		2	Age	-.03	.04	-.03	-.78	.44	-.03
			Gender	-2.48	1.06	-.10	-2.34	.02	-.09
			H Sociable	2.53	.54	.24	4.68	<.001	.19
			H Assertive	.27	.61	.02	.45	.66	.02
			T Aggressive	2.37	.58	.20	4.07	<.001	.16
			T Open	-.24	.52	-.02	-.46	.64	-.02
			T Caring	2.72	.60	.21	4.57	<.001	.18
			H Supportive	.38	.65	.03	.58	.56	.02
			H Involved	.74	.57	.07	1.31	.19	.05
			T Dependent	.82	.67	.06	1.22	.22	.05
.04**	BAI	1	Age	-.13	.04	-.14	-2.98	<.01	-.14
			Gender	-3.00	1.19	-.12	-2.52	.01	-.12
.11**		2	Age	-.09	3.04	-.10	-1.94	.05	-.09
			Gender	-3.12	1.21	-.12	-2.58	.01	-.12
			H Sociable	1.30	.62	.12	2.11	.04	.09
			H Assertive	-.15	.69	-.01	-.22	.82	-.01
			T Aggressive	2.26	.66	.18	3.43	<.01	.15
			T Open	-.52	.60	-.04	-.88	.38	-.04
			T Caring	1.25	.68	.10	1.83	.07	.08
			H Supportive	.60	.75	.05	.80	.42	.04
			H Involved	.65	.66	.06	.99	.33	.04
			T Dependent	.37	.75	.03	.49	.62	.02
.01	Q-LES-Q	1	Age	.03	.05	.03	.54	.59	.03
			Gender	-2.02	1.47	-.06	-1.37	.17	-.06
.23**		2	Age	.01	.05	.01	.25	.81	.01
			Gender	-1.19	1.40	-.04	-.85	.40	-.03
			H Sociable	-3.51	.72	-.26	-4.86	<.001	-.20
			H Assertive	.10	.80	.01	.13	.90	.01
			T Aggressive	-2.85	.77	-.18	-3.69	<.001	-.15
			T Open	-.57	.70	-.04	-.81	.42	-.03
			T Caring	-2.22	.79	-.13	-2.83	<.01	-.12
			H Supportive	-.23	.86	-.01	-.26	.79	-.01
			H Involved	-3.00	.75	-.21	-4.03	<.001	-.16
			T Dependent	1.09	.89	.07	1.23	.22	.05

Note. Significant Part *r* coefficients are in italics. AD = anxiety and depression; H = hard to be; T = too; BDI-II = Beck Depression Inventory; BAI = Beck Anxiety Inventory; Q-LES-Q = Quality of Life Enjoyment and Satisfaction Questionnaire.

\* $p < .05$ ; \*\* $p < .001$ .

(.92), H supportive (.92), T caring (.35), T dependent (1.17), T aggressive (-.19), H involved (.53), and T open (.33).

Analysis of Covariance (ANCOVA) compared mean subscale scores between the samples, with age and gender as covariates. The AD sample scored higher on the H sociable,  $F(1, 815) = 15.31$ ,  $p < .001$ ,  $d = .41$ , H assertive,  $F(1, 815) = 4.11$ ,  $p < .05$ ,

**Table 4.** Hierarchical multiple linear regression analyses with IIP-32 subscales predicting symptom measures for the ED sample

$R^2$	Criterion	Step	Predictors	Statistics								
				<i>B</i>	SE <i>B</i>	$\beta$	<i>t</i>	<i>p</i>	Part <i>r</i>			
<.01 .42*	DASS- Depression	1	Age	<.01	.08	<.01	.02	.98	<.01			
		2	Age	-.05	.06	-.03	-.75	.46	-.03			
			H Sociable	4.02	.61	.37	6.63	<.001	.28			
			H Assertive	1.06	.60	.09	1.78	.08	.08			
			T Aggressive	1.30	.60	.11	2.17	.03	.09			
			T Open	.56	.60	.04	.93	.35	.04			
			T Caring	1.90	.65	.15	2.91	<.01	.12			
			H Supportive	.75	.77	.05	.98	.33	.04			
			H Involved	1.74	.64	.15	2.71	<.01	.12			
			T Dependent	.45	.68	.04	.66	.51	.03			
			.01 .37*	DASS-Anxiety	1	Age	-.03	.05	-.04	-.64	.53	-.04
					2	Age	-.05	.05	-.05	-1.02	.31	-.05
			H Sociable	1.13	.45	.15	2.53	.01	.11			
			H Assertive	.75	.44	.09	1.69	.09	.08			
			T Aggressive	1.24	.44	.15	2.79	.01	.12			
			T Open	-.08	.47	-.01	-.18	.86	-.01			
			T Caring	1.68	.49	.19	3.46	<.01	.15			
			H Supportive	.61	.57	.06	1.08	.28	.05			
			H Involved	1.77	.48	.22	3.72	<.001	.17			
			T Dependent	.79	.50	.09	1.58	.12	.07			
			<.001 .24*	EDE-Q	1	Age	<.01	.01	.01	.24	.81	.01
					2	Age	<.01	.01	.02	.39	.70	.02
			H Sociable	.20	.07	.17	2.72	<.01	.13			
			H Assertive	-.01	.07	-.01	-.14	.89	-.01			
			T Aggressive	-.02	.07	-.02	-.28	.78	-.01			
			T Open	-.12	.07	-.09	-1.64	.10	-.08			
			T Caring	.22	.08	.17	2.82	<.01	.14			
			H Supportive	<.01	.09	<.01	-.01	.99	<.01			
			H Involved	.12	.08	.10	1.60	.11	.08			
			T Dependent	.34	.08	.25	4.13	<.001	.20			
			<.01 .37*	Q-LES-Q	1	Age	.07	.10	.04	.69	.49	.04
					2	Age	.10	.09	.06	1.22	.22	.06
			H Sociable	-5.95	.84	-.42	-7.04	<.001	-.32			
			H Assertive	.68	.84	.05	.81	.42	.04			
			T Aggressive	-1.08	.84	-.07	-1.29	.20	-.06			
			T Open	.90	.84	.05	1.07	.28	.05			
			T Caring	-2.20	.91	-.13	-2.42	.02	-.11			
			H Supportive	-2.34	1.07	-.12	-2.19	.03	-.10			
			H Involved	-.99	.90	-.07	-1.10	.27	-.05			
			T Dependent	-1.09	.95	-.07	-1.16	.25	-.05			

Note. Significant Part *r* coefficients are in italics. ED = eating disorders; H = hard to be; T = too; DASS = Depression Anxiety and Stress Scale; DASS-D = depression subscale; DASS-A = anxiety subscale; EDE-Q = Eating Disorder Examination Questionnaire global score; Q-LES-Q = Quality of Life Enjoyment and Satisfaction Questionnaire.

\* $p < .001$ .

**Table 5.** Summary of the IIP-32 scales explaining unique variance in each symptom measure for the AD and ED samples

	H sociable		H assertive		T aggressive		T open		T caring		H supportive		H involved		T dependent	
	AD	ED	AD	ED	AD	ED	AD	ED	AD	ED	AD	ED	AD	ED	AD	ED
Depression	✓	✓	X	X	✓	✓	X	X	✓	✓	X	X	X	✓	X	X
Anxiety	✓	✓	X	X	✓	✓	X	X	✓	✓	X	X	X	✓	X	X
Q-LES-Q	✓	✓	X	X	✓	✓	X	X	✓	✓	X	✓	✓	X	X	X
EDE-Q	-	✓	-	X	-	X	-	X	-	✓	-	X	-	X	-	✓

Note. IIP = Inventory of Interpersonal Problems; H = hard to be; T = too; Depression and anxiety were measured by the Beck Depression Inventory and Beck Anxiety Inventory for the AD sample, and the DASS-Depression and DASS-Anxiety scales for the ED sample. EDE-Q = Eating Disorder Examination Questionnaire global score; Q-LES-Q = Quality of Life Enjoyment and Satisfaction Questionnaire. Tick indicates a significant predictor, cross indicates a non-significant predictor. Dash indicates symptom measure not administered.

**Table 6.** Means (standard deviations) for the IIP-32 total and subscale scores for the AD, ED, and whole sample

	AD	ED	Whole sample
Total	1.69 (.58)	1.57 (.61)	1.64 (.59)
H Assertive	2.13 (1.11)	1.66 (1.12)	1.93 (1.14)
H Sociable	2.11 (.99)	1.89 (1.07)	2.01 (1.03)
H Supportive	1.39 (.97)	1.41 (1.05)	1.40 (1.00)
H Involved	1.63 (1.07)	1.43 (1.07)	1.54 (1.07)
T Aggressive	.98 (.90)	.69 (.84)	.86 (.89)
T Caring	1.60 (.98)	1.58 (.96)	1.59 (.97)
T Dependent	1.86 (.91)	1.93 (.96)	1.89 (.93)
T Open	1.86 (.91)	2.04 (.96)	1.93 (.93)

Note. AD = anxiety and depression; ED = eating disorder; H = hard to be; T = too.

$d = .21$ , H supportive,  $F(1, 815) = 6.73$ ,  $p = .01$ ,  $d = .33$ , and H involved,  $F(1, 815) = 3.78$ ,  $p = .05$ ,  $d = .19$ , subscales. The two samples did not significantly differ on the T dependent,  $F(1, 815) = .80$ ,  $p = .37$ ,  $d = -.19$ , T aggressive,  $F(1, 815) = 2.69$ ,  $p = .10$ ,  $d = .02$ , T open,  $F(1, 815) = .04$ ,  $p = .84$ ,  $d = .02$ , or T caring,  $F(1, 815) = .01$ ,  $p = .92$ ,  $d = .08$ , subscales.

## Discussion

Integrative models of psychopathology suggest that interpersonal problems can be both a cause and consequence of emotional disorders (Fairburn *et al.*, 2003; Newman & Erickson, 2010). However, few studies in the CBT literature routinely measure interpersonal problems as potential contributors to symptoms, or the relationship between changes in interpersonal problems and symptom change, and those that do sometimes rely on poorly validated measures (e.g., Fairburn *et al.*, 2009). This omission may partly be explained by the lack of well-validated, brief, and clinically informative gold standard measures of interpersonal problems. The IIP offers a potential solution, but the multitude of versions and relatively complex theoretical and analytical approaches to using it have likely limited its clinical application. To examine the clinical utility of the IIP-32, the first aim of this study was to test the eight-factor structure of the IIP-32 in two large samples with principal anxiety and depressive disorders or eating disorders. The second aim was to test for factor invariance across these samples to establish the robustness of the structure for these different populations. The third aim was to examine relationships between the IIP-32 subscales, symptom measures, and QoL. Understanding these associations will be informative for individualized case formulations, by identifying the presence of the most pernicious and dysfunctional interpersonal styles. Interesting comparisons can also be made between these samples, potentially leading to theoretical refinements and, ultimately, interventions targeting transdiagnostic and diagnosis-specific interpersonal styles associated with symptoms of these disorders.

Consistent with our hypotheses, the eight-factor structure provided a good fit in both the AD and ED samples, and this factor structure proved robustly invariant. The IIP-32 subscales were also remarkably consistent at predicting anxiety and depression symptoms across the disorder groups. The Hard to be (H) sociable and Too (T) caring subscales were consistently associated with higher anxiety, depression, and eating

disorder symptoms, as well as poorer QoL, and thus may be seen as broadly debilitating interpersonal problems. The H sociable scale measures difficulty making friends, joining groups, and feeling comfortable around other people, and thus reflects social awkwardness. The T caring subscale measures a tendency to subjugate oneself by prioritizing others' needs (I put other people's needs before my own too much, Hard to attend to my own welfare when someone else is needy) and being overly empathic (I am affected by another person's misery too much). Identifying and targeting these interpersonal styles in treatment may be helpful regardless of principal diagnosis. For instance, interpersonal sensitivity, fear of negative evaluation, and low self-esteem are core features of anxiety, depression, and eating disorders (Fairburn *et al.*, 2003; Steiger, Gauvin, Jabalpurwala, Séguin, & Stotland, 1999; Uhmman, Beesdo-Baum, Becker, & Hoyer, 2010) that could contribute to difficulties socializing and/or subjugation of one's own needs, which, in turn, maintains interpersonal sensitivity, fear of negative evaluation, and low self-esteem. Identification of interpersonal problems provides an additional avenue for breaking these vicious cycles.

The dearth of research using the IIP-32 makes it difficult to directly compare these findings to those of previous studies. Lampard *et al.* (2011) used the IIP-32 to examine interpersonal problems within the context of the transdiagnostic model of eating disorders (Fairburn *et al.*, 2003). On the basis of unpublished data with undergraduate samples, these researchers used the H sociable and T dependent subscales of the IIP-32 to model interpersonal problems because, consistent with our study using a clinical sample, these two factors accounted for unique variance in eating disorders symptoms. The T dependent subscale measures a tendency towards jealousy, worrying about others reactions, wanting to be admired by others, and dependency. Our study extended these findings by demonstrating that the T caring subscale also explained unique variance in eating disorder symptoms within a clinical sample. Thus, the tendency to subjugate one's own needs and to be overly empathic may represent an additional interpersonal problem that is a cause or consequence of pathological levels of disordered eating. Lampard *et al.* found that adding interpersonal problems, along with other elements of an enhanced model of BN, improved the explanatory utility of the model. Moreover, interpersonal problems were associated with dietary restraint. However, the H sociable and T dependent subscales were not associated with other core aspects of BN, namely bingeing and purging. It is for future research to determine if inclusion of the T caring subscale would increase explanatory power of interpersonal problems beyond sociability and dependence. We are not aware of previous studies using the IIP-32 in clinical samples with anxiety and depressive disorders for comparison.

The T aggressive subscale was the only other consistent predictor of anxiety and depression symptoms across both samples, and it also predicted QoL in the AD sample. This scale measures a tendency to lose one's temper, fight, get irritated or annoyed too much. Although our study is cross-sectional, so causal relationships cannot be identified, it is tempting to speculate that the tendency towards aggression may result from the anxiety response (i.e., fight rather than flight), and depression symptoms may ensue as a consequence (e.g., following disapproval from others or regret for one's actions). Consistent with this possibility, after monitoring anxiety, depression, and interpersonal experience daily in a sample with GAD, Starr and Davila (2012) concluded that '...anxiety symptoms seem to be more likely to lead to later depressive symptoms when anxiety is accompanied by feelings of rejection or interpersonal hassles' (p. 11).

The H involved subscale predicted depression and anxiety symptoms in the ED, but not the AD disorders sample. The H involved subscale measures a difficulty committing to

another person or being involved without feeling trapped, and difficulty feeling love or showing affection to others. It is not clear from our study whether this problem is a cause, consequence, or epiphenomenon of the eating disorder. However, it is plausible that others' negative reactions to the disordered eating may alienate the individual with the eating disorder. Alternatively, the inability to form close attachments may be a risk factor for overcontrol of eating, as the individual learns they have little control over interpersonal aspects of their lives (see Fairburn *et al.*, 2003 for additional explanations). Future longitudinal research would be useful to shed light on the direction of these relationships.

The H sociable and T caring subscales were also consistently associated with QoL, whereas the T aggressive and H involved subscales only predicted QoL in the AD sample, and the H supportive subscale only predicted QoL in the ED sample. These differences cannot be attributed to age or gender differences, which were controlled for, and thus may reflect genuine diagnosis-specific differences in the impacts of different interpersonal problems on QoL. It is not clear why the T aggressive and H involved subscales predicted QoL only within the AD sample, especially given that the latter predicted anxiety and depression symptoms in the ED sample. Mean scores on the T aggressive scale did not significantly differ across the two samples, so the differential impact on QoL cannot be attributed to more self-reported aggression within the AD sample overall. However, it is noteworthy that this scale was the only one on which the ED sample scored lower than Barkham *et al.*'s (1996) community sample, whereas the AD sample scored higher than the community sample. An alternative explanation is that whereas higher levels of aggression may have more influence over QoL for anxiety and depressive disorders, other interpersonal problems have a larger impact on QoL for those with eating disorders. For instance, the H supportive subscale also uniquely predicted QoL in the ED sample, which reflects a preoccupation with one's own problems at the expense of empathizing with others (e.g., Hard to really care about other people's problems, Hard to put someone else's needs before my own, Hard to take instructions from people who have authority over me). This interpersonal style may reflect a tendency towards apathy rather than aggression in response to others' frustration or difficulties, which may be detrimental to relationships and, in turn, adversely impact QoL. The AD sample scored higher on the H involved subscale than the ED sample, which might explain why this interpersonal problem had a larger impact on QoL for the AD sample.

The results of this study contribute to the growing literature on transdiagnostic cognitive behavioural processes (Harvey, Watkins, Mansell, & Shafran, 2004; Mansell, Harvey, Watkins, & Shafran, 2009). Harvey *et al.*'s (2004) comprehensive review identified common attention, memory, reasoning, thought, and behavioural processes across multiple emotional disorders. Our findings suggest that interpersonal problems are associated with common and diagnosis-specific symptoms, as well as QoL, across anxiety, depressive, and eating disorders. Should future research replicate these findings, extend them to additional disorders (e.g., psychosis, somatoform) and symptoms (e.g., insomnia), and demonstrate causal relationships, then interpersonal problems would be confirmed as important transdiagnostic and trans-symptom processes. Targeting transdiagnostic and diagnosis-specific interpersonal problems reliably associated with psychopathology in treatment protocols may ultimately optimize treatment engagement and outcomes.

This study has several limitations. First, the ED sample comprised almost entirely of women and, although this predominance of women is representative of individuals presenting for ED treatment, it is not clear how well these findings would generalize to men with eating disorders. Second, the cross-sectional and correlational research

design prohibited causal conclusions. It may be that the interpersonal problems cause symptoms and/or are a consequence of symptoms, or that other variables contribute to both symptoms and interpersonal problems. Longitudinal research and treatment studies investigating temporal relationships between symptoms and interpersonal problems would be informative. Third, some anxiety, depression, and eating disorders were underrepresented within our samples, which may limit the generalizability of our findings. Research examining the psychometric properties of the IIP-32 for disorders underrepresented or not included in this study would be informative to establish the breadth of its transdiagnostic applications. Fourth, different measures of depression and anxiety symptoms were used across the two samples, which may explain some of the inconsistencies. However, the consistencies across the different measures were striking, which may actually strengthen confidence in our findings. Fifth, one of the aims of this study was to identify subscales from the relatively brief IIP-32 that are most strongly and uniquely associated with symptoms and QoL across anxiety, depression, and eating disorder samples. Distilling the subscales into those most strongly predictive of symptoms may be most informative for therapists working in real world clinical settings, who may not have the time or expertise to use circumplex methodologies to interpret scale scores. However, the cost of this transtheoretical approach is that it is difficult to reconcile our findings with previous research using a circumplex approach.

Notwithstanding these limitations, this study had several strengths. First, two large clinical samples with principal anxiety or depression diagnoses or eating disorders were used, which enabled factor invariance to be rigorously assessed. Second, associations between IIP-32 subscales and anxiety and depression symptoms were highly consistent across samples. Third, we included a measure of QoL so that we could assess broader associations with interpersonal problems beyond psychopathology. The structure of the IIP-32 proved to be robust across the AD and ED samples, thus supporting its use as a transdiagnostic measure of interpersonal problems. The H sociable and T caring subscales were most consistently associated with higher symptoms and poorer QoL. Should these findings be replicated, and the IIP-32 subscales found to be associated with treatment outcomes, the IIP-32 may offer considerable clinical utility for developing individualized case formulations, treatment planning, and ensuring optimal outcomes.

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Received 9 May 2012; revised version received 26 June 2012