APPENDIX 1 – Online supplemental digital content

Assessment of the measurement quality of an instrument within the Rasch analysis framework (Pellicciari et al. 2018)

Internal Construct Validity (Rasch mode/s requirements) Item invariance or item homogeneity* Visual inspection Individual ICC ¹¹ Visual inspection Individual ICC ¹¹ Visual inspection Individual ICC ¹¹ Summary item fit residual (Standard deviation) ^{12,22} Around 0 in case of a perfect fit Non-significant (Bonferroni corrected) Item hierarchy: face validity ¹⁴ Visual inspection Visual inspecti	Measurement quality domain/parameter	Indicator	Expected values / findings
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Assessment of item fit residuals ^{A2} Individual item fit residuals (mean) ^{A22} Around 0 in case of a perfect fit Assessment of item-trait interaction ^{A3} Chi-square for individual items ^{A3.1} Non-significant (Bonferroni corrected) Item hierarchy: face validity ^{A4} Visual inspection Item hierarchy: face validity ^{A4} Visual inspection Person invariancel ^B Assessment of person fit residuals Assessment of person fit residuals Person fit residual (mean) ^{B2} Summary person fit residual (mean) ^{B2} Around 0 in case of a perfect fit Non-significant (Bonferroni corrected) Item hierarchy: face validity ^{A4} Visual inspection Between -2.5 and +2.5 Around 1 in case of a perfect fit Non-significant (Bonferroni corrected) Item hierarchy conforms to theoretical expectations Between -2.5 and +2.5 Around 0 in case of a perfect fit Around 0 in case of	Item invariance or item homogeneity ^A		
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Assessment of item-trait interaction ^{A3}		Summary item fit residual (mean)A2.2	Around 0 in case of a perfect fit
Summary chi-square across all items A3.2 Non-significant (Bonferroni corrected)		Summary item fit residual (standard deviation) ^{A2.2}	Around 1 in case of a perfect fit
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Distribution-dependent separation ^{H1} Person Separation Index (PSI) ≥.70 for group measurement; ≥.90 for individual person measurement Distribution-dependent strata ^{H2} Number of strata (H) ≥2 strata for group measurement; ≥4 strata for person measurement Distribution-independent strata ^{H3} Number of DLPA ≥2 DLPA for group measurement; ≥4 DLPA for person measurement Distribution-independent separation ^{H4} Distribution independent PSI (DI-PSI) ≥.70 for group measurement; ≥.90 for person measurement at the individual level Information ^{H5} Item and Test information Expected to follow a normal distribution (higher in the middle of the measurement range)	Measurement error ^{G2}	Standard Error of Measurement (SEM)	Expected to be as low as possible
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Distribution-independent separation ^{H4} Distribution independent PSI (DI-PSI) ≥.70 for group measurement; ≥.90 for person measurement at the individual level Expected to follow a normal distribution (higher in the middle of the measurement range)	Distribution-dependent strata ^{H2}	Number of strata (H)	≥2 strata for group measurement; ≥4 strata for person measurement
Information ^{H5} Item and Test information Expected to follow a normal distribution (higher in the middle of the measurement range)	Distribution-independent strata ^{H3}	Number of DLPA	≥2 DLPA for group measurement; ≥4 DLPA for person measurement
	Distribution-independent separation ^{H4}	Distribution independent PSI (DI-PSI)	≥.70 for group measurement; ≥.90 for person measurement at the individual level
Targeting	Information ^{H5}	Item and Test information	Expected to follow a normal distribution (higher in the middle of the measurement range)
iai geening	Targeting		
Targeting ¹¹ Targeting Index < 1 : good targeting; >[1 , 2]: fair targeting; > 2 : poor targeting (indicate absolute values)	Targeting ¹¹	Targeting Index	
Ceiling effect ¹² Calculation of % of persons with maximum score <2%: good; [2%, 5%]: fair; >5%: poor	Ceiling effect ¹²	Calculation of % of persons with maximum score	<2%: good; [2%, 5%]: fair; >5%: poor
Floor effect ¹² Calculation of % of persons with minimum score 2%: good; [2%, 5%]: fair; >5%: poor	Floor effect ¹²	Calculation of % of persons with minimum score	2%: good; [2%, 5%]: fair; >5%: poor

NOTES.

- A Item invariance (or homogeneity). The items should maintain their stochastic ordering along with the whole latent trait (Andrich 1988; Tennant and Conaghan 2007). This essential Rasch model requirement is assessed in several ways:
 - o A1 Fit to the model for items (I): visual assessment of the Item Characteristic Curve (ICC) for a given item. The ICC is a visual indicator of the model's fit, which displays the expected probabilities to pass the item for any ability level along the measurement continuum. To assess fit to the model, another curve is constructed by connecting the observed probabilities values across groups representing different ability levels (called class intervals). The match between the two curves is then assessed (Hobart and Cano 2009). A good match between the two curves for any given class interval suggests an adequate fit to the model. However, there are several anomalies which could be appraised:
 - A^{1.1} Item under-discrimination: a flatter observed probability curve indicates that the item is under-discriminating (please see also note A^{2.1}), i.e., the responses to the item are too erratic, suggesting that the responses to the item are influenced by a different latent variable (Hobart and Cano 2009).
 - A1.2 Item over-discrimination: on the other hand, a steeper curve suggests that the item is over-discriminating (please see also note A2.1), i.e., the responses to the item lacks the expected randomness and tend to be too deterministic (Hobart and Cano 2009).
 - o A1.3 Increased item-trait interaction: independently from item discrimination, the presence of one or more individual class interval markedly outside the expected probability curve for a given item suggest that responses to that item, at some ability levels, deviate from the model's expectations. This implies that the item does not maintain its stochastic ordering along with the measurement trait, thus violating the invariance (homogeneity) of the item hierarchy (please see also note^{A3.1}) (Andrich 1988; Hobart and Cano 2009).
 - A2 Fit to the model for items (II): Item fit residuals (iFitRes). iFitRes are the standardized sum of all differences between the observed and expected values summed over all persons for items (Tennant and Conaghan 2007; Hobart and Cano 2009). These can be evaluated:
 - o A2.1At the individual item level: iFitRes for a given item is expected to be 0 in case of achievement of a perfect probabilistic Guttman pattern. In case of an adequate fit to the model, they are expected to be in the range [-2.5, +2.5], which represents the 99% confidence interval around the iFitRes (Pallant and Tennant 2007; Hobart and Cano 2009). Values outside this confidence interval for a given item suggest misfit:
 - Values >+2.5: these are indicative of item under-discrimination (please see also note^{A1.1}), which suggests that the observed response tends to follow less the expected Guttman pattern (i.e., excessively random).
 - Values <-2.5: these are indicative of item over-discrimination (please see also note^{A1.2}), which suggests that the observed responses tend to be deterministic (i.e., lacking the expected randomness).
 - A2.2As a summary indicator: fit to the model for individual items can be summarized as a mean and a standard deviation of the iFitRes (please see note A2.1). In case of perfect fit to the model, such means and standard deviations are expected to assume values equal to zero and, respectively, one, as they are transformed to approximate a z score, representing a standardized normal distribution (Pallant and Tennant 2007).
 - A3 Fit to the model for items (III): Item-trait interaction. This refers directly to the Rasch model's statistical property of homogeneity or item invariance³¹. Item-trait interaction can be evaluated:
 - o A3.1At the item level: The χ² statistics summarizes whether item invariance is achieved by comparing the differences between the expected values and observed values across groups representing different ability levels (called class intervals) and across the trait to be measured (please see also note A1.3). When significant (taking into account a Bonferroni-corrected p-value) for an item, the latter violates the invariance of the item hierarchy, which suggests that this item does not fit the Rasch model (Hobart and Cano 2009).
 - \circ A3.2As a summary indicator: This total χ^2 is calculated by summing up the chi-squares of the individual items (please see note A3.1) divided by the sum of their degrees of freedom minus one (Tennant and Conaghan 2007; Hobart and Cano 2009). As for the item-trait interaction χ^2 for individual items, when significant below the Bonferroni-

corrected p-value, this χ^2 suggests that the data do not fit the Rasch model as the item hierarchy as a whole do not maintain its stochastic ordering along the whole measurement continuum.

- A4 Fit to the model for items (IV): face validity of the item difficulty order. This is a conceptual indicator of fit. The item difficulty order suggested by the analysis should make sense from a clinical point of view and be consistent with the expectations derived from theory. If this is the case, it provides evidence towards the construct validity of the item set concerning the variable being measured (Hobart and Cano 2009). If this is not the case, the statistical fit to the Rasch model may have capitalized on chance.
- B Fit to the model for persons: Person fit residuals (pFitRes). The pFitRes are the standardized sum of all differences between observed and expected values summed over all items for persons (Tennant and Conaghan 2007; Hobart and Cano 2009). As for items (please see note A2), these can be evaluated:
 - o B1At the individual person level: pFitRes for a given person is expected to be 0 in case of achievement of a perfect probabilistic Guttman pattern. In case of an adequate fit to the model, they are expected to be in the range [-2.5, +2.5], which represents the 99% confidence interval around the pFitRes (Pallant and Tennant 2007; Hobart and Cano 2009). Values outside this confidence interval for a given person suggest misfit:
 - Values >+2.5: these are indicative of person under-discrimination (please see also note^{A2}), which suggests that the observed response tends to follow less the expected Guttman pattern (i.e., excessively random).
 - Values <-2.5: these are indicative of person over-discrimination (please see also note^{A2}), which suggests that the observed responses tend to be deterministic (i.e., lacking the expected randomness).
 - o B2As a summary indicator: Fit to the model for individual persons can be summarized as a mean and a standard deviation of the pFitRes (please see note^{BI}). In case of perfect fit to the model, such means and standard deviations are expected to assume values equal to zero and, respectively, one, as they are transformed to approximate a z score, representing a standardized normal distribution (Pallant and Tennant 2007).
- C Unidimensionality requirement. All items should measure a single underlying construct (Tennant and Conaghan 2007; Kreiner 2013). Unidimensionality is tested post-hoc with a paired test on separate estimates for each respondent (derived from subsets of items identified by the principal component analysis of the item residuals) (Smith 2002). Unidimensionality is considered achieved when the PST (percentage of significant t-test) is <5% (strict unidimensionality), or the LBCI (lower bound of the binomial confidence interval for proportions) is <5% (acceptable unidimensionality) (Tennant and Conaghan 2007).
- Decal Independence requirement. All the variation among responses to an item should be accounted for by the person's ability and, therefore, for the same value of ability, there should be no further systematic relationship among responses (local independence requirement) (Kreiner 2013). Items are considered to be locally dependent if their residual correlation is above a Local Dependency Relative Cutoff (LDRC), calculated by adding .2 to the average of residual correlations, after having removed the correlation of each item to itself, equal to 1 (Marais 2013).

 Violations of local dependency may be indicative of (Marais and Andrich 2008b, 2008a):
 - Multidimensionality: although items are requested to be unidimensional, they should also measure different facets of the same construct. However, when some items differ between each other too much, multidimensionality arises as a violation of the local independence requirement. This violation is suggested by high residual correlations, a decreased person reliability, and a reduced variance of the person estimates (Marais and Andrich 2008b).
 - e Response dependence: this occurs when a person's response to an item depends on the person's response to a previous item. In other words, the two dependent items, although unidimensional, measure a similar aspect of the same construct. This is suggested by a high residual correlation between the two dependent items, increased person reliability, and increased variance of the person estimates (Marais and Andrich 2008b).
- Invariance for subgroup (absence of Differential Item Functioning DIF or item bias) requirement. DIF occurs when an item, regardless of maintaining its stochastic ordering at the whole sample level (please see note A3), shows a lack of invariance, i.e., DIF, across relevant subgroups (or person factors), such as gender or age (Tennant and Conaghan 2007; Kreiner 2013). In this case, different groups of persons within a person factor respond differently based on their group membership, despite equal levels of the underlying characteristics. The presence of DIF is tested by a two-way ANOVA for each item, where scores are compared across each level of the person factor and different ability levels, as summarized by the class intervals (please see

note^{A1} for a definition of a class interval) (Pallant and Tennant 2007). DIF is present when the results of ANOVA are significant (p-values are Bonferroni-corrected). Two types of DIF can be observed:

- o Uniform-DIF (U-DIF): the item bias is systematic along with the trait, as suggested by a significant main effect for the person factor (Pallant and Tennant 2007).
- Non-Uniform-DIF (NU-DIF): the item bias varies along with the trait, as suggested by a significant interaction effect (person factor x class interval) (Pallant and Tennant 2007).
- F Monotonicity requirement. The probability of endorsing an item response indicating higher ability should increase as the underlying level of the latent trait increases (monotonicity requirement) (Mesbah and Kreiner 2013). As a consequence, the difficulty thresholds (i.e., transition point between adjacent scoring categories) appear ordered. In the case of polytomous items, if the response options for a given item are used inconsistently (e.g., because of misinterpretation of the scoring options, caused by too many scoring options or by inaccurate labeling of the options), the difficulty thresholds appear disordered (Tennant and Conaghan 2007).
- G1 Cronbach's α (Classical Test Theory reliability) is derived as the proportion of variance of the true score and the total variance, including error (Hobart and Cano 2009). It is an indicator of internal consistency because it is a function of the average inter-item correlations (Brodersen et al. 2013). This statistic is distribution-dependent (Wright 2001). ≥.70 and ≥.90 are considered the absolute minimum for the group and individual person measurements, respectively (Brodersen et al. 2013; Revicki et al. 2014).
- G2 Closely related to the concept of reliability within the Classical Test Theory framework is that of the Standard Error of Measurement (SEM), that is calculated as follows: $SEM = SD \times \sqrt{1-r}$, where SD is the standard deviation of the person measures and r is the reliability coefficient (i.e., the Cronbach's alpha). It indicates the dispersion of the measurement errors when trying to estimate person abilities from their observed scores. It is less meaningful within the Rasch analysis framework, as in the latter, the standard errors are individually calculated for each person measurement (Hobart and Cano 2009). However, it is here reported as it is used to calculate the targeting index (please see note¹¹).
- H¹ PSI is calculated as the ratio between the variance among the estimates of persons tested and the error variance for each person; it indicates how reliably the persons are separated (Hobart and Cano 2009). Also, this statistic is distribution-dependent, meaning that if the data are skewed for the occurrence of the floor and/or ceiling effects, the PSI will be reduced (Wright 2001). On the other hand, when the distribution of the data is not skewed, the values of PSI and Cronbach's α are virtually identical (Marais 2013). ≥.70 and ≥.90 are considered the absolute minimum for the group and individual person measurements, respectively (Brodersen et al. 2013; Revicki et al. 2014), as explained in note^{G1}.
- H2 Strata (H) are the number of statistically distinct levels of person ability (person strata) that the scale can reliably distinguish (Wright and Masters 1982; Fisher 1992). This statistics is based on the PSI and, therefore, it is distribution-dependent, as it assumes a normally-distributed sample (Wright 2001). If PSI=.700, then H=2 (minimum requirement for individual person measurement) (Fisher 1992).
- H3 DLPAs are the number of statistically distinct levels of person ability that the scale can reliably distinguish independently from the distribution of the sample (Wright 2001). Unlike strata (please see note^{H3}), this statistic does not assume a normally-distributed example (Wright 2001).
- H4 DI-PSI is the distribution-independent PSI, calculated using the formula $DLPA^2/(1/DLPA^2)$ (Wright 2001). This indicator may be useful for skewed samples where the PSI values may grossly under-estimate the separation reliability of the scale (Wright 2001).
- H5 Information (I) (Salzberger 2003; Kreiner and Christensen 2013) for a given item is calculated as follows: $I = \frac{1}{SE^2}$, i.e., the reciprocal of the squared standard error around the person
 - measure. It is a measure of the precision of the estimation of a person's ability within the range of measurement of the item (Salzberger 2003). Over the items in a test, individual item information adds up to test information (Salzberger 2003).
- In the targeting index is calculated as the ratio between the Person locations' mean and the SEM (Standard Error of Measurement; please see note^{G2} for the formula) (Fisher 2007). It indicates how the average person location has moved away from the average item difficulty, set by default at 0 logits.
- 12 Ceiling and floor effects indicate how many persons in the sample have received the higher and, respectively, the lower scores of the scale (Fisher 2007).

References for Appendix 1

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APPENDIX 2 – Online supplemental digital content

Retained items

BMQ01. I find it hard to get out of bed in the

Table 2a. Item content, fit statistics, and scoring model for the final solution of the BIRT Motivation Questionnaire (N=308)

Item Parameters and Fit Statistics

	Retained items		160	iii ruiuii	ctci3 unu	rit Statistic	LS	_			
	(increasing difficulty from top to bottom)	Conceptual facet	Location	SE	FR	χ²	Prob ^a	Sco	oring	g Mo	del
-	BMQ14. I feel tired	Affective/emotional	-0.839	0.086	0.520	0.876	0.9279	0	1	2	3
	BMQ16. It takes longer to finish things these days	Lack of organization	-0.797	0.076	1.838	7.097	0.1309	0	1	2	3
	BMQ31. I get distracted from what I am doing	Distractability/Persever	-0.691	0.079	-0.513	2.576	0.6310	0	1	2	3
	BMQ11. I have lots of 'get up and go'	Affective/emotional	-0.535	0.073	0.843	7.414	0.1156	0	1	2	3
	BMQ22. I feel confident	Affective/emotional	-0.453	0.073	1.418	3.892	0.4208	0	1	2	3
	BMQ08. I make the same mistakes over and over again	Distractability/Persever	-0.184	0.082	-0.158	3.876	0.4231	0	1	2	3
	BMQ27. I have doubts about what I can achieve	Indecision/lack of ideas	-0.138	0.081	0.491	3.800	0.4338	0	1	2	3
	BMQ12. I avoid doing things I do not have to	Difficulty to initiate	-0.118	0.077	0.897	2.896	0.5754	0	1	2	3
	BMQ07. It is hard to decide what I want when people give me choices about things	Indecision/lack of ideas	0.054	0.084	0.111	2.302	0.6804	0	1	2	3
	BMQ23. I think of things to do but never get around to doing them	Difficulty to initiate	0.096	0.081	0.418	4.990	0.2883	0	1	2	3
	BMQ25. I feel I have got nothing done all day	Affective/emotional	0.115	0.079	1.616	10.592	0.0316	0	1	2	3
	BMQ02. I leave things until the last minute	Difficulty to initiate	0.128	0.084	0.352	1.728	0.7857	0	1	2	3
	BMQ20. It is hard to think of things to do	Indecision/lack of ideas	0.147	0.079	-1.340	5.577	0.2330	0	1	2	3
	BMQ26. I am disorganised	Lack of organization	0.161	0.080	-1.917	14.371	0.0062	0	1	2	3
	BMQ19. I finish things I start	Lack of organization	0.264	0.082	-0.915	1.921	0.7502	0	1	2	3
	BMQ15. I get/do things in the wrong order	Lack of organization	0.645	0.092	-1.933	10.247	0.0365	0	1	2	3
	BMQ28. I try hard	Affective/emotional	0.672	0.087	0.428	5.479	0.2416	0	1	2	3
	BMQ03. I am late for appointments	Lack of organization	0.697	0.090	2.833	16.193	0.0028	0	1	2	3
	BMQ04. I cannot be bothered to do important	Affective/emotional									
	things, even though I know I should		0.774	0.090	0.751	5.375	0.2510	0	1	2	3
-	Deleted items			_				_			
	(in order of deletion from top to bottom)	Conceptual facet		Reasons for deletion					oring	g Mo	aeı
	BMQ30. I feel energetic	Affective/emotional		ocal dependency					1	2	3
		Affective/effictional	Local depe	endency				0		_	
	BMQ05. I get muddled	Indecision/lack of ideas	Local depe	•				0	1	2	3
		•	•	endency							3 3
	BMQ05. I get muddled BMQ09. I can concentrate for long periods BMQ13. I feel satisfied when I have finished	Indecision/lack of ideas	Local depe	endency endency	nd misfitti	ng (underfi	tting with	0	1 1	2	3
	BMQ09. I can concentrate for long periods	Indecision/lack of ideas Distractability/Persever	Local depe	endency endency endency a		ng (underfi	tting with	0	1	2	
	BMQ09. I can concentrate for long periods BMQ13. I feel satisfied when I have finished	Indecision/lack of ideas Distractability/Persever	Local depe Local depe Local depe	endency endency endency a chi-squar		ng (underfi	tting with	0	1 1	2	3
	BMQ09. I can concentrate for long periods BMQ13. I feel satisfied when I have finished something	Indecision/lack of ideas Distractability/Persever Affective/emotional	Local depe Local depe Local depe significant Local depe	endency endency endency a chi-squar endency	e)	ng (underfi gnificant ch	J	0 0	1 1	2 2 2	3
	BMQ09. I can concentrate for long periods BMQ13. I feel satisfied when I have finished something BMQ24. I am an enthusiastic person BMQ06. I plan my week and make arrangements	Indecision/lack of ideas Distractability/Persever Affective/emotional Affective/emotional	Local depe Local depe Local depe significant Local depe Misfitting	endency endency endency a chi-squar endency (underfitt	e) ing with si		ni-square)	0 0 0	1 1 1	2 2 2 2	3 3
	BMQ09. I can concentrate for long periods BMQ13. I feel satisfied when I have finished something BMQ24. I am an enthusiastic person BMQ06. I plan my week and make arrangements for things to do	Indecision/lack of ideas Distractability/Persever Affective/emotional Affective/emotional Lack of organization	Local depe Local depe Local depe significant Local depe Misfitting Misfitting Local depe	endency endency endency a chi-squar endency (underfitt (underfitt endency a	e) ing with si ing with si nd misfitti	gnificant ch	ni-square) ni-square)	0 0 0 0	1 1 1 1	2 2 2 2 2	3 3 3
	BMQ09. I can concentrate for long periods BMQ13. I feel satisfied when I have finished something BMQ24. I am an enthusiastic person BMQ06. I plan my week and make arrangements for things to do BMQ32. I am good at making new friends	Indecision/lack of ideas Distractability/Persever Affective/emotional Affective/emotional Lack of organization Affective/emotional	Local depe Local depe Local depe significant Local depe Misfitting Misfitting Local depe significant	endency endency a chi-squar endency (underfitt (underfitt endency a chi-squar	e) ing with si ing with si nd misfitti e)	gnificant ch	ni-square) ni-square) tting with	0 0 0 0 0 0	1 1 1 1 1	2 2 2 2 2 2	3 3 3 3
	BMQ09. I can concentrate for long periods BMQ13. I feel satisfied when I have finished something BMQ24. I am an enthusiastic person BMQ06. I plan my week and make arrangements for things to do BMQ32. I am good at making new friends BMQ18. I am interested in my appearance BMQ33. I know what I want	Indecision/lack of ideas Distractability/Persever Affective/emotional Affective/emotional Lack of organization Affective/emotional Affective/emotional Affective/emotional	Local depe Local depe Local depe significant Local depe Misfitting Misfitting Local depe significant Local depe	endency endency a chi-squar endency (underfitt (underfitt endency a chi-squar endency a	e) ing with si ing with si nd misfitti e) nd uniforn	gnificant ch gnificant ch ng (underfi	ni-square) ni-square) tting with	0 0 0 0 0 0	1 1 1 1 1 1	2 2 2 2 2 2 2	3 3 3 3 3
	BMQ09. I can concentrate for long periods BMQ13. I feel satisfied when I have finished something BMQ24. I am an enthusiastic person BMQ06. I plan my week and make arrangements for things to do BMQ32. I am good at making new friends BMQ18. I am interested in my appearance BMQ33. I know what I want BMQ29. I enjoy life	Indecision/lack of ideas Distractability/Persever Affective/emotional Affective/emotional Lack of organization Affective/emotional Affective/emotional Indecision/lack of ideas Affective/emotional	Local depe Local depe significant Local depe Misfitting Misfitting Local depe significant Local depe lesion Uniform D	endency endency endency endency endency (underfitt endency a chi-squar endency a	e) ing with si ing with si nd misfitti e) nd uniforn oonder	gnificant ch gnificant ch ng (underfi n DIF for tir	ni-square) ni-square) tting with	0 0 0 0 0 0 0	1 1 1 1 1 1	2 2 2 2 2 2 2 2	3 3 3 3 3
	BMQ09. I can concentrate for long periods BMQ13. I feel satisfied when I have finished something BMQ24. I am an enthusiastic person BMQ06. I plan my week and make arrangements for things to do BMQ32. I am good at making new friends BMQ18. I am interested in my appearance BMQ33. I know what I want BMQ29. I enjoy life BMQ21. I achieve my goals	Indecision/lack of ideas Distractability/Persever Affective/emotional Affective/emotional Lack of organization Affective/emotional Affective/emotional Indecision/lack of ideas Affective/emotional Affective/emotional Affective/emotional	Local depe Local depe Significant Local depe Misfitting Misfitting Local depe Significant Local depe lesion Uniform D Local depe	endency endency endency a chi-squar endency (underfitt endency a chi-squar endency a	e) ing with si ing with si nd misfitti e) nd uniforn oonder	gnificant ch gnificant ch ng (underfi n DIF for tir	ni-square) ni-square) tting with	0 0 0 0 0 0 0 0	1 1 1 1 1 1 1	2 2 2 2 2 2 2 2 2	3 3 3 3 3 3
	BMQ09. I can concentrate for long periods BMQ13. I feel satisfied when I have finished something BMQ24. I am an enthusiastic person BMQ06. I plan my week and make arrangements for things to do BMQ32. I am good at making new friends BMQ18. I am interested in my appearance BMQ33. I know what I want BMQ29. I enjoy life BMQ21. I achieve my goals BMQ34. I give my all BMQ10. It is hard to get started, even when I know	Indecision/lack of ideas Distractability/Persever Affective/emotional Affective/emotional Lack of organization Affective/emotional Affective/emotional Indecision/lack of ideas Affective/emotional	Local depe Local depe significant Local depe Misfitting Misfitting Local depe significant Local depe lesion Uniform D Local depe Local depe Local depe	endency endency endency a chi-squar endency (underfitt endency a chi-squar endency a endency a endency a	e) ing with si ing with si nd misfitti e) nd uniforn conder nd rescore	gnificant ch gnificant ch ng (underfi n DIF for tir	ni-square) ni-square) tting with ne since	0 0 0 0 0 0 0	1 1 1 1 1 1 1 1 1 1	2 2 2 2 2 2 2 2 2 2	3 3 3 3 3 3 3 2
	BMQ09. I can concentrate for long periods BMQ13. I feel satisfied when I have finished something BMQ24. I am an enthusiastic person BMQ06. I plan my week and make arrangements for things to do BMQ32. I am good at making new friends BMQ18. I am interested in my appearance BMQ33. I know what I want BMQ29. I enjoy life BMQ21. I achieve my goals BMQ34. I give my all	Indecision/lack of ideas Distractability/Persever Affective/emotional Affective/emotional Lack of organization Affective/emotional Affective/emotional Indecision/lack of ideas Affective/emotional Affective/emotional Affective/emotional Affective/emotional Affective/emotional	Local depe Local depe significant Local depe Misfitting Misfitting Local depe significant Local depe lesion Uniform D Local depe Local depe	endency endency endency endency endency (underfitt (underfitt endency a chi-squar endency a endency a endency a	e) ing with si ing with si nd misfitti e) nd uniforn conder nd rescore	gnificant ch gnificant ch ng (underfi n DIF for tir	ni-square) ni-square) tting with ne since	0 0 0 0 0 0 0	1 1 1 1 1 1 1 1 1 1	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	3 3 3 3 3 3 3 2

Abbreviations: BMQ, BIRT Motivation Questionnaire; FR, fit residual; Prob, χ^2 probability; SE, standard error; χ^2 , chi-square; DIF, Differential Item Functioning. Notes: The second column from the left contains the conceptual facets identified within the questionnaire: affective/emotional (including anhedonia, hopelessness, indifference, and lethargy), indecision/lack of ideas, difficulties to initiate a task, lack of organization, and distractibility/perseverance. The location is expressed in logits. The degrees of freedom for each χ^2 were 4 for all items. The original scoring pattern for all items was 0 1 2 3. The lower part of the table displays the 15 items which were progressively deleted (from top to bottom) together with the reasons for their deletion. ^aBonferroni-corrected p-value was set at 0.0026, indicative of statistical significance at the 0.05 level.

Local dependency and rescored

Affective/emotional

Table 2b. Item content, fit statistics, and scoring model for the final solution of the BIRT Emotional Regulation Questionnaire (N=308)

·	Retained items Second Sec							_		
(increasing difficulty from top to bottom)	Conceptual facet	Location	SE	FR	χ²	Prob ^a	Sc	oring	Мо	del
BREQ01. I have sudden mood swings	Lability/mood swings	-1.099	0.088	-2.126	10.716	0.0300	0	1	2	3
BREQ20. I am a calm person	Emotional control/Irritability	-0.812	0.087	1.461	4.542	0.3376	0	1	2	3
BREQ21. I sulk when I have been in a bad mood	Emotional control/Irritability	-0.650	0.087	1.707	12.913	0.0117	0	1	2	3
BREQ03. I am unpredictable	Lability/mood swings	-0.577	0.085	1.576	5.516	0.2384	0	1	2	3
BREQ30. I get upset	Emotional control/Irritability	-0.473	0.093	-1.166	3.344	0.5020	0	1	2	3
BREQ22. It is hard for people to get through to me when I am upset	Emotional control/Irritability	-0.346	0.110	0.758	1.778	0.7766	0	1	1	2
BREQ32. I snap at people	Emotional control/Irritability	-0.132	0.091	0.487	2.158	0.7068	0	1	2	3
BREQ27. When I get into a rage everything becomes a blur	Outburst consequences	-0.077	0.089	-1.713	3.390	0.4947	0	1	2	3
BREQ17. I feel anxious for no reason	No reason/cause	-0.033	0.092	-0.217	1.017	0.9072	0	1	2	3
BREQ15. I feel tired after I have been in a rage	Outburst consequences	-0.022	0.092	-0.718	12.091	0.0167	0	1	2	3
BREQ10. I get into a rage	Emotional control/Irritability	0.300	0.099	-0.134	1.925	0.7496	0	1	2	3
BREQ19. I do not understand why I am upset	No reason/cause	0.336	0.100	0.012	4.521	0.3401	0	1	2	3
BREQ07. I cannot remember what happens when I lose my temper	Outburst consequences	0.409	0.121	-1.238	8.402	0.0779	0	1	1	2
BREQ31. When I am angry, I do not understand why	No reason/cause	0.591	0.104	-1.138	3.962	0.4112	0	1	2	3
BREQ14. I cry for no reason	No reason/cause	0.633	0.107	1.947	4.932	0.2944	0	1	2	3
BREQ09. I feel upset for no reason	No reason/cause	0.667	0.107	-1.514	5.496	0.2400	0	1	2	3
BREQ23. I break things I value when I am in a	Emotional control/Irritability	0.007	0.103	-1.514	3.490	0.2400	U	1	2	3
temper	Emotional control/irritability	1.286	0.161	-0.962	2.798	0.5921	0	1	1	2
Deleted items (in order of deletion from top to bottom)	Conceptual facet		Reas	ons for de	letion		Sco	oring	Мо	del
BREQ05. My mood can change quickly for no reason	No reason/cause	Local depe	endency a	nd misfitti	ng (overfitt	ing)	0	1	2	3
BREQ18. I am happy one moment and sad the next	Lability/mood swings	Local depe	endency				0	1	2	3
BREQ25. I don't understand the way I feel	No reason/cause	Local depe	-		ng (underfi	tting with	0	1	2	3
BREQ16. I lose my temper	Emotional control/Irritability	-			ng (overfitt	ing)	0	1	2	3
BREQ28. I lose my temper and then regret it	Outburst consequences				underfittin		0	1	1	2
BREQ24. I am relaxed	Emotional control/Irritability	significant Local depe			scored ng (underfi	tting with				
BREQ08. I laugh for no reason	No reason/cause	significant	chi-squar	re)	(underfittir		0	1	2	3
-	·	significant	chi-squar	e), and res	cored	_	0	1	1	2
BREQ12. I am in control	Emotional control/Irritability	Local depe significant	-		ng (undefit	ting with	0	1	2	3
BREQ02. I lose my temper very suddenly without knowing why	No reason/cause	Local depe	endency a	nd misfitti	ng (overfitt	ing)	0	1	2	3
BREQ11. I feel really sad and do not know why	No reason/cause	•	endency a	nd misfitti	ng (signific	ant chi-	0	1	2	3
BREQ06. I feel embarrassed when I lose my temper	Outburst consequences	square) Misfitting (underfitting with significant chi-square) and rescored						1	1	2
BREQ26. I suddenly feel angry and do not know why	No reason/cause	Local depe					0	1	2	3
BREQ04. I find it hard to keep my temper under control	Emotional control/Irritability	Local depe	endency				0	1	2	3
BREQ29. When I get angry I take it out on the people closest to me	Emotional control/Irritability	Local depe	-		F for time s	ince	0	1	1	2
BREQ13. I get a headache when I've been in a rage	Outburst consequences	Local depe			ed		0	1	1	2

Abbreviations: BREQ, BIRT Emotional Regulation Questionnaire; FR, fit residual; Prob, χ^2 probability; SE, standard error; χ^2 , chi-square; DIF, Differential Item Functioning.

Notes: The second column contains the conceptual facets identified within the questionnaire: emotional lability/mood swings, irritability/lack of emotional control/inappropriate behavior, no reasons/cause for the behavior, and outburst consequences. The location is expressed in logits. The degrees of freedom for each χ^2 were 4 for all items. The original scoring pattern for all items was 0 1 2 3. The lower part of the table displays the 15 items which were progressively deleted (from top to bottom) together with the reasons for their deletion.

^aBonferroni-corrected p-value was set at 0.0029, indicative of statistical significance at the 0.05 level.

Table 2c. Item content, fit statistics, and scoring model for the final solution of the BIRT Social Cognition Questionnaire (N=308)

Retained items		Iten	n Parame	eters and I	Fit Statist	ics				
(increasing difficulty from top to bottom)	Conceptual facet	Location	SE	FR	χ^2	Prob ^a	Sco	oring	ј Мо	del
BSCQ09. I am amusing	Social anxiety	-1.050	0.081	-0.562	1.492	0.8280	0	1	2	3
BSCQ20. I feel comfortable in social situations	Social anxiety	-0.786	0.073	-0.336	7.194	0.1260	0	1	2	3
BSCQ11. I am relaxed around other people	Social anxiety	-0.686	0.075	0.439	1.927	0.7492	0	1	2	3
BSCQ16. I prefer being on my own than with others	Social interaction	-0.451	0.108	-0.859	7.526	0.1106	0	1	1	2
BSCQ06. I find it hard to imagine things in the future	Theory of mind/Empathy	-0.414	0.102	0.347	2.779	0.5955	0	1	1	2
BSCQ12. I find it hard to tell how people feel	Theory of mind/Empathy	-0.011	0.118	1.719	5.051	0.2821	0	1	1	2
BSCQ10. I find it hard to make friends	Social interaction	0.111	0.084	-1.551	7.703	0.1031	0	1	2	3
BSCQ28. I get confused when talking in a group of people	Social anxiety	0.175	0.109	-0.256	1.339	0.8548	0	1	1	2
BSCQ27. I enjoy other people's company	Social interaction	0.214	0.086	0.448	1.456	0.8344	0	1	2	3
BSCQ01. I feel left out of conversations	Social interaction	0.489	0.093	-0.976	3.790	0.4351	0	1	2	3
BSCQ03. People misunderstand me	Theory of mind/Empathy	0.549	0.122	0.880	0.413	0.9814	0	1	1	2
BSCQ04. I find it hard to understand people on the telephone	External cues	0.767	0.106	0.124	1.646	0.8004	0	1	2	3
BSCQ24. People get cross with me for no	Theory of mind/Empathy	1.092	0.119	0.341	4.761	0.3127	0	1	2	3
reason										
Deleted items	Conceptual facet		Posso	ns for del	otion		Sc	oring	- ma	dal
(in order of deletion from top to bottom)	Conceptual facet		Neasu	iis ioi uei	etion		30	אַרוווע	3 1110	uei
BSCQ02. I find it hard to understand what people mean	External cues	Local depe	endency				0	1	2	3
BSCQ18. I misunderstand people	External cues	Local depe	endency				0	1	2	3
BSCQ14. I say things at the wrong time	External cues	Local depe	endency				0	1	2	3
BSCQ23. I enjoy socialising	Social interaction	Local depe	endency				0	1	2	3
BSCQ22. I am a loner	Social anxiety	Local depe	endency a	nd rescor	ed		0	1	1	2
BSCQ17. I feel isolated even when there are people around me	Social interaction	Local depe square), a	•	_	(significa	nt chi-	0	1	1	2
BSCQ19. I worry about what other people think	-	Misfitting square)	(undefitti	ng with si	gnificant	chi-	0	1	2	3
BSCQ08. I spend time with friends	Social interaction	Local depe	endency a	and unifor	m DIF for		0	1	2	3
BSCQ07. I do not understand why people	Theory of mind/Empathy	Local depe	endency a	nd unifor	m DIF for		0	1	2	3

Abbreviations: BSCQ, BIRT Social Cognition Questionnaire; FR, fit residual; Prob, χ^2 probability; SE, standard error; χ^2 , chi-square; DIF, Differential Item Functioning.

education

Local dependency

Local dependency

Local dependency and rescored

Misfitting (significant chi-square)

Local dependency and rescored

Misfitting (significant chi-square) and rescored

0 1 1 2

0

0 1

2

1 2

Notes: The second column from the left contains the conceptual facets identified within the questionnaire: inability to interpret external cues, lack of empathy/theory of mind, social anxiety, and problems in social interaction. The location is expressed in logits. The degrees of freedom for each χ^2 were 4 for all items. The original scoring pattern for all items was 0 1 2 3. The lower part of the table displays the 15 items which were progressively deleted (from top to bottom) together with the reasons for their deletion.

Social interaction

Theory of mind/Empathy

Social anxiety

Social anxiety

External cues

External cues

behave the way they do

BSCQ21. I feel left out at parties or social

BSCQ15. It is hard to tell if people like me

events
BSCQ13. I am a sociable person

BSCQ25. I say the wrong thing

BSCQ05. I get instructions wrong

BSCQ26. I am polite

^aBonferroni-corrected p-value was set at 0.0038, indicative of statistical significance at the 0.05 level.

Table 2d. Item content, fit statistics, and scoring model for the final solution of the BIRT Disinhibition

Questionnaire (N=308)

Retained items	Company				it Statistic					
(increasing difficulty from top to bottom)	Conceptual facet	Location	SE	FR	χ²	Proba	Sco	oring	Мо	de
BDQ16. It is hard not to say something once I have thought of it	Inhibition of verbal behavior/lack of tact	-0.838	0.076	0.132	1.459	0.8339	0	1	2	3
nave thought of it	Inhibition of verbal	-0.809	0.075	1.755	2.827	0.5871	0	1	2	3
BDQ24. I can hold back my feelings	behavior/lack of tact	-0.005	0.075	1.755	2.027	0.5671	U	_	_	
DDQ24. I can floid back my feelings	Inhibition of verbal	-0.760	0.074	0.522	1.182	0.8810	0	1	2	
BDQ23. I am careful what I say	behavior/lack of tact	0.700	0.074	0.522	1.102	0.0010	U	-	_	
SEQES. Fam careful What I say	Inhibition of verbal	-0.756	0.100	0.475	0.684	0.9533	0	1	1	
BDQ22. I can go on a bit	behavior/lack of tact	0.750	0.200	05	0.00	0.5555	•	_	_	
	Inhibition of verbal	-0.708	0.075	0.958	2.747	0.6011	0	1	2	
BDQ17. I talk too much	behavior/lack of tact									
3DQ03. It is hard to stop myself from doing	Inhibition of				1.843		_		_	
things I know I should not do	behaviour/gratification delay	-0.043	0.085	0.745		0.7646	0	1	2	
BDQ18. I am open about my sexual feelings	,	-0.014	0.105	0.503	12.614	0.0133	0	1	1	
towards people	Sexual disinhibition									
BDQ01. I say things that people might	Inhibition of verbal	0.365	0.099	-1.152	7.503	0.1116	0	1	2	
consider rude	behavior/lack of tact									
	Inhibition of	0.396	0.117	-1.054	12.081	0.0168	0	1	1	
BDQ19. I am childish	behaviour/gratification delay									
BDQ02. I tell people I do not know personal	Inhibition of verbal	0.461	0.096	-1.360	5.328	0.2553	0	1	2	
things about myself	behavior/lack of tact									
BDQ06. I get over-excited	Sexual disinhibition	0.872	0.105	-1.127	5.753	0.2183	0	1	2	
DQ05. I say rude things to people I do not	Inhibition of verbal	0.889	0.123	-1.866	5.965	0.2018	0	1	2	
know very well	behavior/lack of tact									
BDQ14. I hug and kiss strangers	Sexual disinhibition	0.946	0.140	0.834	4.560	0.3355	0	1	1	
List of deleted items (in order of deletion from top to bottom)	Conceptual facet		Reaso	ns for dele	etion		Sc	oring	mo	d
BDQ11. I feel I have to do things even though	Inhibition of	Misfitting (u	ınderfittir	o and sign	nificant chi		0	1	1	
I might get into trouble	behaviour/gratification delay	square), , u		-			Ü	-	-	
g get into trouble	benaviour, grammation acia;	non-uniforr		_		acı, ana				
BDQ 07. I do what I want	Inhibition of	Misfitting (u				i-square)	0	1	2	
	behaviour/gratification delay						-	_	_	
BDQ 12. I wait my turn	Inhibition of	Local deper	ndency, mi	isfitting (u	nderfitting	with	0	1	1	
	behaviour/gratification delay	significant o								
	,	uniform DIF	-							
BDQ 20. I can concentrate on what I am	Inhibition of	Misfitting (u	•				0	1	2	
loing	behaviour/gratification delay									
BDQ 09. It is hard to stop thinking about	Inhibition of	Local deper	ndency an	d misfittin	g (significa	nt chi-	0	1	2	
something I want to do	behaviour/gratification delay	square)	-							
BDQ 21. I let someone know if I find them attractive	Sexual disinhibition	Local deper	ndency an	d rescored	i		0	1	1	
BDQ 04. I do things that I know are wrong	Inhibition of	Local deper	ndency				0	1	2	
	behaviour/gratification delay	•	•							
BDQ 13. It is hard for me to stop myself once	Inhibition of	Local deper	ndency an	d misfittin	g (underfit	tting	0	1	2	
I have got an idea into my head	behaviour/gratification delay	with signific				_				
BDQ 15. I find it hard to be patient and wait	Inhibition of verbal	Local deper	ndency an	d rescored	i		0	1	1	
for my turn to speak	behavior/lack of tact									
BDQ 10. I say things that embarrass people	Inhibition of verbal	Local deper	ndency, mi	isfitting (si	gnificant o	:hi-	0	1	1	
	behavior/lack of tact	square) and	d rescored							
BDQ 08. It is hard to stop myself from doing	Inhibition of	Misfitting (u			nificant ch	i-square)	0	1	1	
bud oo. It is hard to stop myself from doing	iiiiiibicioii oi					,	-			

Abbreviations: BDQ, BIRT Disinhibition Questionnaire; FR, fit residual; Prob, χ^2 probability; SE, standard error; χ^2 , chi-square.

Notes: The second column from the left contains the conceptual facets identified within the questionnaire: inability to inhibit behavior or to delay gratification, inability to inhibit verbal behavior/lack of tact, and sexual disinhibition. The location is expressed in logits. The degrees of freedom for each χ^2 were 4 for all items. The original scoring pattern for all items was 0 1 2 3. The lower part of the table displays the 11 items which were progressively deleted (from top to bottom) together with the reasons for their deletion.

^aBonferroni-corrected p-value was set at 0.0038, indicative of statistical significance at the 0.05 level.

Table 2e. Item content, fit statistics, and scoring model for the final solution of the BIRT Impulsivity Questionnaire (N=308)

Retained items	Concentual facet				it Statistic		_	_		
(increasing difficulty from top to bottom)	Conceptual facet	Location	SE	FR	χ²	Proba	Sco	oring	Мо	del
BIQ08. When I want something it is hard to wait	Acting/speaking on impulse	-1.066	0.076	-0.103	3.912	0.4181	0	1	2	3
BIQ09. I am a calm person	Emotional impulsivity	-0.724	0.080	0.807	7.583	0.1081	0	1	2	3
BIQ24. I rush into things	Lack of planning /Inability to foresee outcome	-0.634	0.082	1.435	4.614	0.3292	0	1	2	3
BIQ14. I change my mind about things	Snap decision making/spontaneity	-0.397	0.096	-0.114	7.512	0.1112	0	1	2	
BIQ25. I feel restless	Emotional impulsivity	-0.301	0.087	-1.057	9.348	0.0530	0	1	2	
BIQ30. I do things on the 'spur of the moment'	Snap decision making/spontaneity	-0.290	0.093	-1.317	9.011	0.0608	0	1	2	
BIQ03. I say things without thinking	Acting/speaking on impulse	-0.085	0.088	-0.622	1.319	0.8581	0	1	2	
BIQ12. I buy things I do not need	Acting/speaking on impulse	-0.071	0.085	2.095	8.628	0.0711	0	1	2	
BIQ07. I get angry all of a sudden	Emotional impulsivity	0.095	0.090	-0.769	2.948	0.5666	0	1	2	
BIQ15. It is hard to stop myself from doing things I am not supposed to	Acting/speaking on impulse	0.138	0.090	-1.338	3.675	0.4517	0	1	2	
BIQ11. I do not realise that what I'm doing might be dangerous	Lack of planning /Inability to foresee outcome	0.188	0.112	0.924	2.639	0.6199	0	1	1	
BIQ02. I am good at keeping secrets	Acting/speaking on impulse	0.206	0.112	1.961	11.492	0.0216	0	1	1	
BIQ28. I get over-excited	Emotional impulsivity	0.569	0.102	-0.429	2.753	0.5999	0	1	2	
BIQ10. I upset people without realising	Acting/speaking on impulse	0.649	0.100	-1.599	6.389	0.1719	0	1	2	
BIQ19. I feel 'out of control'	Emotional impulsivity	0.821	0.107	-0.548	2.632	0.6212	0	1	2	
BIQ16. I spend all of my money as soon as I	Lack of planning /Inability to	0.901	0.130	0.379	1.371	0.8492	0	1	1	
get it	foresee outcome									
List of deleted items	Conceptual facet		Reaso	ns for dele	etion		Sc	oring	, mo	de
(in order of deletion from top to bottom)	<u> </u>									
BIQ01. I plan ahead	Lack of planning /Inability to	Local deper	-		g (underfi	tting	0	1	2	
	foresee outcome	with signific								
BIQ20. I make a plan first before I start a task	Lack of planning /Inability to foresee outcome	Local deper with signific	cant chi-so	quare)		_	0	1	2	
BIQ18. It is easy for me to make my mind up about things	Snap decision making/spontaneity	Local deper with signific	cant chi-so	quare)		_	0	1	2	
BIQ22. I do things in a hurry	Acting/speaking on impulse	Local deper with signific	cant chi-so	quare)			0	1	2	
BIQ26. I say things I should not	Acting/speaking on impulse	Local deper significant o			g (overfitt	ing with	0	1	2	
BIQ04. When I have an idea I want to tell people about it straight away	Acting/speaking on impulse	Misfitting (underfittir	ng)			0	1	2	
BIQ13. I do things without thinking	Acting/speaking on impulse	Local deper					0	1	2	
3IQ29. I make snap decisions	Snap decision making/spontaneity	Local deper	ndency an	d misfittin	g (overfitt	ing)	0	1	2	
BIQ06. I am careful what I say	Acting/speaking on impulse	Local deper	-				0	1	2	
BIQ27. I buy more than I need	Acting/speaking on impulse	Local deper	,				0	1	2	
BIQ17. I am a relaxed person	Emotional impulsivity	Local dependency and misfitting (significant chisquare)						1	2	
BIQ23. If I see something I like I buy it straight away	Acting/speaking on impulse	Local dependency						1	2	
BIQ05. I blurt things out when I do not mean to	Acting/speaking on impulse	Local deper	ndency an	d rescored	d		0	1	1	
BIQ32. I am a patient person	Emotional impulsivity	Local deper	ndency				0	1	2	
BIQ31. I think about things carefully before I do them	Acting/speaking on impulse	Misfitting (underfittir	ng)			0	1	2	
BIQ21. I find it hard to concentrate for a long time	?	Misfitting (s	significant	chi-squar	e)		0	1	2	

Abbreviations: BDQ, BIRT Disinhibition Questionnaire; FR, fit residual; Prob, χ^2 probability; SE, standard error; χ^2 , chi-square.

Notes: The second column from the left contains the conceptual facets identified within the questionnaire: acting/speaking on impulse, emotional impulsivity, lack of planning/inability to foresee outcomes, and snap decision-making/excessive spontaneity. The location is expressed in logits. The degrees of freedom for each χ^2 were 4 for all items. The original scoring pattern for all items was 0 1 2 3. The lower part of the table displays the 16 items which were progressively deleted together with the reasons for their deletion.

^aBonferroni-corrected p-value was set at 0.0031, indicative of statistical significance at the 0.05 level.

SHORT FORM OF THE "BRAIN INJURY REHABILITATION TRUST PERSONALITY QUESTIONNAIRE" (BIRT-PQ SF)

Patient version

L. Pellicciari, D. Piscitelli, B. Basagni, A. De Tanti, L. Algeri, S. Caselli, E. Scarano, J. Conforti, A. Estraneo, P. Moretta, M.G. Gambini, M.G. Inzaghi, G. Lamberti, M. Mancuso, C. Quinquinio, M. Sozzi, L. Abbruzzese, M. Zettin, F. La Porta 'Less is more': validation with Rasch analysis of five short-forms for the Brain Injury Rehabilitation Trust Personality Questionnaires (BIRT-PQs).

Brain Injury.

Name and Surname:	Administration date:
Diagnosis:	Lesion date:

BIRT-PQ Short Forms – PATIENT version	TOTAL SCORE
MOTIVATION (BMQ-SF19-P)	/57
EMOTIONAL REGULATION (BREQ-SF17-P)	/48
SOCIAL COGNITION (BSCQ-SF13-P)	/34
DISINHIBITION (BDQ-SF13-P)	/35
IMPULSIVITY (BIQ-SF16-P)	/45

Please read the following statements. Each statement is followed by a series of possible responses: *always, often, sometimes, never*. Please CIRCLE the response which you consider best fits each statement. Please respond to every statement. If you are not sure which response is the best one, please choose the response which you feel is most appropriate. Do not spend too long on each question. It is essential that you answer each question as honestly as possible.

MOTIVATION Short Form Questionnaire – PATIENT version (BMQ-SF19-P)

N°	Item description	Never	Sometimes	Often	Always	Assigned score
DN4OO2	Lleave things until the last minute	Never	Sometimes	Often	Always	
BMQ02	I leave things until the last minute	(0)	(1)	(2)	(3)	
BMQ03	I am late for appointments	Never	Sometimes	Often	Always	
DIVIQUO		(0)	(1)	(2)	(3)	
BMQ04	I cannot be bothered to do important things, even	Never	Sometimes	Often	Always	
DIVIQUI	though I know I should	(0)	(1)	(2)	(3)	
BMQ07	It is hard to decide what I want when people give	Never	Sometimes	Often	Always	
DIVIQU	me choices about things	(0)	(1)	(2)	(3)	
BMQ08	I make the same mistakes over and over again	Never	Sometimes	Often	Always	
DIVIQUO	Timake the same mistakes over and over again	(0)	(1)	(2)	(3)	
BMQ11	I have lots of 'get up and go.'	Never	Sometimes	Often	Always	
	0 · · · · · · · · · · · · · · · · · · ·	(3)	(2)	(1)	(0)	
BMQ12	I avoid doing things I do not have to	Never	Sometimes	Often	Always	
	3 0	(0)	(1)	(2)	(3)	
BMQ14	I feel tired	Never (0)	Sometimes (1)	Often (2)	Always (3)	
		Never	Sometimes	Often	Always	
BMQ15	I get/do things in the wrong order	(0)	(1)	(2)	(3)	
		Never	Sometimes	Often	Always	
BMQ16	It takes longer to finish things these days	(0)	(1)	(2)	(3)	
DN 4040	I Catalanta and a same	Never	Sometimes	Often	Always	
BMQ19	I finish things I start	(3)	(2)	(1)	(0)	
BMQ20	It is hard to think of things to do	Never	Sometimes	Often	Always	
DIVIQZU	it is flatu to tillfik of tillfigs to do	(0)	(1)	(2)	(3)	
BMQ22	I feel confident	Never	Sometimes	Often	Always	
DIVIQEE		(3)	(2)	(1)	(0)	
BMQ23	I think of things to do but never get around to	Never	Sometimes	Often	Always	
DIVIQES	doing them	(0)	(1)	(2)	(3)	
BMQ25	I feel I have got nothing done all-day	Never	Sometimes	Often	Always	
DIVIQES	Treet thate got nothing done an day	(0)	(1)	(2)	(3)	
BMQ26	I am disorganized	Never	Sometimes	Often	Always	
	<u> </u>	(0)	(1)	(2)	(3)	
BMQ27	I have doubts about what I can achieve	Never	Sometimes	Often	Always	
		(0)	(1) Sometimes	(2) Often	(3) Always	
BMQ28	I try hard	Never (3)	(2)	(1)	(0)	
		Never	Sometimes	Often	Always	
BMQ31	I get distracted from what I am doing	(0)	(1)	(2)	(3)	
	I	15/	1 (-/	\-/	(5)	
					AL SCORE	/5

EMOTIONAL REGULATION Short Form Questionnaire – PATIENT version (BREQ-SF17-P)

N°	Item description	Never	Sometimes	Often	Always	Assigned score
DDEO01	Lhave sudden mood swings	Never	Sometimes	Often	Always	
BREQ01	I have sudden mood swings	(0)	(1)	(2)	(3)	
BREQ03	I am unpredictable	Never	Sometimes	Often	Always	
DIVEQUO	·	(0)	(1)	(2)	(3)	
BREQ07	I cannot remember what happens when I lose my	Never	Sometimes	Often	Always	
DIVLOOT	temper	(0)	(1)	(1)	(2)	
BREQ09	I feel upset for no reason	Never	Sometimes	Often		
DIVEQUO	ricer upset for no reason	(0)	(1)	(2)	(3) Always	
BREQ10	I get into a rage	Never	Sometimes	Often		
DIVEQTO	1 get into a rage	(0)	(1)	(2)	(3)	
BREQ14	I cry for no reason	Never	Sometimes	Often	Always	
	Tory for the reason	(0)	(1)	(2)	(3)	
BREQ15	I feel tired after I have been in a rage	Never	Sometimes	Often	Always	
	The time and the time been in a rage	(0)	(1)	(2)	(3)	
BREQ17	I feel anxious for no reason	Never	Sometimes	Often	Always	
	Tree and the reason	(0)	(1)	(2)	(3)	
BREQ19	I do not understand why I am upset	Never	Sometimes	Often Always		
	The first and an action at the first and a	(0)	(1)	(2)	(3)	
BREQ20	I am a calm person	Never	Sometimes	Often	Always	
		(3)	(2)	(1)	(0)	
BREQ21	I sulk when I have been in a bad mood	Never	Sometimes	Often	Always	
		(0)	(1)	(2)	(3)	
BREQ22	It is hard for people to get through to me when I	Never	Sometimes	Often	Always	
DITEQUE	am upset	(0)	(1)	(1)	(2)	
BREQ23	I break things I value when I am in a temper	Never	Sometimes	Often	Always	
DITEQ25	r break things i value when i all in a temper	(0)	(1)	(1)	(2)	
BREQ27	When I get into a rage, everything becomes a blur	Never	Sometimes	Often	Always	
DILLUZI	Trich i See into a rage, everything becomes a bia	(0)	(1)	(2)	(3)	
BREQ30	I get upset	Never	Sometimes	Often	Always	
DILLQOO	, Ser about	(0)	(1)	(2)	(3)	
BREQ31	When I am angry, I do not understand why	Never	Sometimes	Often	Always	
	The state of the s	(0)	(1)	(2)	(3)	
BREQ32	I snap at people	Never	Sometimes	Often	Always	
	- 15 %	(0)	(1)	(2)	(3)	
				TOT	AL SCORE	/48

SOCIAL COGNITION Short Form Questionnaire – PATIENT version (BSCQ-SF13-P)

N°	Item description	Never	Sometimes	Often	Always	Assigned score
DCC001	I feel left out of conversations	Never	Sometimes	Often	Always	
BSCQ01	Treer left out of conversations	(0)	(1)	(2)	(3)	
BSCQ03	Poople micunderstand me	Never	Sometimes	Often	Always	
BSCQUS	People misunderstand me	(0)	(1)	(1)	(2)	
DCC004	I find it hard to understand people on the	Never	Sometimes	Often	Always	
BSCQ04	telephone	(0)	(1)	(2)	(3)	
DCCOOC	I find it hand to investige things in the factors	Never	Sometimes	Often	Always	
BSCQ06	I find it hard to imagine things in the future	(0)	(1)	(1)	(2)	
DCCO00	Lamamusing	Never	Sometimes	Often	Always	
BSCQ09	I am amusing	(3)	(2)	(1)	(0)	
PSCO10	I find it hard to make friends	Never	Sometimes	Often	Always	
BSCQ10	i find it hard to make mends	(0)	(1)	(2)	(3)	
BSCQ11	I am relaxed around other people	Never	Sometimes	Often	Always	
bscq11	Tani relaxed around other people	(3)	(2)	(1)	(0)	
BSCQ12	I find it hard to tell how people feel	Never	Sometimes	Often	Always	
bscq12	Trilla it flata to tell flow people feet	(0)	(1)	(1)	(2)	
BSCQ16	I prefer being on my own than with others	Never	Sometimes	Often	Always	
DJCQ10	T prefer being on my own than with others	(0)	(1)	(1)	(2)	
BSCQ20	I feel comfortable in social situations	Never	Sometimes	Often	Always	
bocqzo	Treer connortable in social situations	(0)	(1)	(2)	(3)	
BSCQ24	People get cross with me for no reason	Never	Sometimes	Often	Always	
DSCQZ4	reopie get cross with the for no reason	(0)	(1)	(2)	(3)	
BSCQ27	I enjoy other people's company	Never	Sometimes	Often	Always	
	renge, earler people a company	(3)	(2)	(1)	(0)	
BSCQ28	I get confused when talking in a group of people	Never	Sometimes	Often	Always	
	. See some see when taking in a group of people	(0)	(1)	(1)	(2)	
				TOTA	AL SCORE	/34

DISINHIBITION Short Form Questionnaire – PATIENT version (BDQ-SF13-P)

N°	Item description	Never	Sometimes	Often	Always	Assigned score			
BDQ01	I say things that people might consider rude	Never	Sometimes	Often	Always				
	, , , , ,	(0)	(1)	(2)	(3)				
BDQ02	I tell people I do not know personal things about	Never	Sometimes	Often	Always				
	myself	(0)	(1)	(2)	(3)				
BDQ03	It is hard to stop myself from doing things I know	Never	Sometimes	Often	Always				
DDQ03	I should not do	(0)	(1)	(2)	(3)				
BD00F	I say rude things to people I do not know very	Never	Sometimes	Often	Always				
BDQ05	well	(0)	(1)	(2)	(3)				
BDQ06 I get over-excited Never Sometimes Often Always									
BDQ06	i get over-excited	(0)	(1)	(2)	(3)				
BDQ14	I hug and kics strangers	Never	Sometimes	Often	Always				
BDQ14	I hug and kiss strangers	(0)	(1)	(1)	(2)				
BDQ16	It is hard not to say something once I have	Never	Sometimes	Often	Always				
BDQ16	thought of it	(0)	(1)	(2)	(3)				
BDO17	I talk too much	Never	Sometimes	Often	Always				
BDQ17	i talk too much	(0)	(1)	(2)	(3)				
DD010	I am open about my sexual feelings towards	Never	Sometimes	Often	Always				
BDQ18	people	(0)	(1)	(1)	(2)				
BB040	Lana abildiah	Never	Sometimes	Often	Always				
BDQ19	I am childish	(0)	(1)	(1)	(2)				
BDO33	Lean go on a hit	Never	Sometimes	Often	Always				
BDQ22	I can go on a bit	(0)	(1)	(1)	(2)				
BDQ23	I am careful what I say	Never	Sometimes	Often	Always				
טטעעט	i anii carerul wilat i say	(3)	(2)	(1)	(0)				
BDQ24	I can hold back my feelings	Never	Sometimes	Often	Always				
DDQZ4	Team flow back my feelings	(3)	(2)	(1)	(0)				
				TOTA	AL SCORE	/35			

IMPULSIVITY Short Form Questionnaire – PATIENT version (BIQ-SF16-P)

N°	Item description	Never	Sometimes	Often	Always	Assigned score
BIQ02	I am good at keeping secrets	Never	Sometimes	Often	Always	
BIQUZ	I am good at keeping secrets	(2)	(1)	(1)	(0)	
BIQ03	I say things without thinking	Never	Sometimes	Often	Always	
biQ03	1 say tilligs without tilliking	(0)	(1)	(2)	(3)	
BIQ07	I get angry all of a sudden	Never	Sometimes	Often	Always	
ысол	I get angry an or a sudden	(0)	(1)	(2)	(3)	
BIQ08	When I want something, it is hard to wait	Never	Sometimes	Often	Always	
ысов	When I want something, it is hard to wait	(0)	(1)	(2)	(3)	
BIQ09	Lam a calm norcen	Never	Sometimes	Often	Always	
ыцоэ	I am a calm person	(3)	(2)	(1)	(0)	
DIO10	Luncot noonlo without realizing	Never	Sometimes	Often	Always	
BIQ10	I upset people without realizing	(0)	(1)	(2)	(3)	
51044	I do not realize that what I'm doing might be	Never	Sometimes	Often	Always	
BIQ11	dangerous	(0)	(1)	(1)	(2)	
		Never	Sometimes	Often	Always	
BIQ12	I buy things I do not need	(0)	(1)	(2)	(3)	
		Never	Sometimes	Often	Always	
BIQ14	I change my mind about things	(0)	(1)	(2)	(3)	
	It is hard to stop myself from doing things I am	Never	Sometimes	Often	Always	
BIQ15	not supposed to	(0)	(1)	(2)	(3)	
		Never	Sometimes	Often	Always	
BIQ16	I spend all of my money as soon as I get it	(0)	(1)	(1)	(2)	
		Never	Sometimes	Often	Always	
BIQ19	I feel 'out of control.'	(0)	(1)	(2)	(3)	
		Never	Sometimes	Often	Always	
BIQ24	I rush into things	(0)	(1)	(2)	(3)	
		Never	Sometimes	Often	Always	
BIQ25	I feel restless	(0)	(1)	(2)	(3)	
		Never	Sometimes	Often	Always	
BIQ28	I get over-excited	(0)	(1)	(2)	(3)	
		Never	Sometimes	Often	Always	
BIQ30	I do things on the 'spur of the moment'	(0)	(1)	(2)	(3)	
		(0)	(1)	(4)	(3)	
				TOTA	AL SCORE	/45

APPENDIX 4

SHORT FORM OF THE "BRAIN INJURY REHABILITATION TRUST PERSONALITY QUESTIONNAIRE" (BIRT-PQ SF)

Caregiver version

L. Pellicciari, D. Piscitelli, B. Basagni, A. De Tanti, L. Algeri, S. Caselli, E. Scarano, J. Conforti, A. Estraneo, P. Moretta, M.G. Gambini, M.G. Inzaghi, G. Lamberti, M. Mancuso, C. Quinquinio, M. Sozzi, L. Abbruzzese, M. Zettin, F. La Porta 'Less is more': validation with Rasch analysis of five short-forms for the Brain Injury Rehabilitation Trust Personality Questionnaires (BIRT-PQs).

Brain Injury.

Name and Surname:	Administration date:
Diagnosis:	Lesion date:

BIRT-PQ Short Forms – CAREGIVER version	TOTAL SCORE
MOTIVATION (BMQ-SF19-C)	/57
EMOTIONAL REGULATION (BREQ-SF17-C)	/48
SOCIAL COGNITION (BSCQ-SF13-C)	/34
DISINHIBITION (BDQ-SF13-C)	/35
IMPULSIVITY (BIQ-SF16-C)	/45

Please read the following statements thinking about your relative. Each statement is followed by a series of possible responses: *always, often, sometimes, never*. Please CIRCLE the response which you consider best fits each statement. Please respond to every statement. If you are not sure which response is the best one, please choose the response which you feel is most appropriate. Do not spend too long on each question. It is essential that you answer each question as honestly as possible.

MOTIVATION Short Form Questionnaire – CAREGIVER version (BMQ-SF19-C)

N°	Item description	Never	Sometimes	Often	Always	Assigned score
BMQ02	He/she leaves things until the last minute	Never	Sometimes	Often	Always	00010
	-	(0) Never	(1) Sometimes	(2) Often		
BMQ03	He/she is late for appointments	(0)	(1)	(2)	•	
	He/she cannot be bothered to do important	Never	Sometimes	Often		
BMQ04	things, even though he/she knows he/she should	(0)	(1)	(2)	1	
	It is hard to decide what he/she wants when	Never	Sometimes	Often		
BMQ07	people give him/her choices about things	(0)	(1)	(2)	(3)	
BMQ08	He/she makes the same mistakes over and over again	Never (0)	Sometimes (1)	Often (2)	Always (3)	
BMQ11	He/she has lots of 'get up and go.'	Never (3)	Sometimes (2)	Often (1)	Always (0)	
DN4043	He/she avoids doing things he/she does not have	Never	Sometimes	Often	Always	
BMQ12	to	(0)	(1)	(2)	(3)	
BMQ14	He/she feels tired	Never	Sometimes	Often	Always	
DIVIQ14	ne/sile leels tiled	(0)	(1)	(2)	(3)	
BMQ15	He/she gets/does things in the wrong order	Never	Sometimes	Often	Always	
DIVIQIS	They sine gets, does things in the wrong order	(0)	(1)	(2)		
BMQ16	He/she takes longer to finish things these days	Never	Sometimes	Often	1	
		(0)	(1)	(2)		
BMQ19	He/she finishes things he/she starts	Never (3)	Sometimes (2)	Often (1)		
		Never	Sometimes	Often	(3) Always (3) Always (3) Always (3) Always (3) Always (0) Always (3)	
BMQ20	It is hard for him/her to think of things to do	(0)	(1)	(2)	1	
BMQ22	He/she feels confident	Never (3)	Sometimes (2)	Often (1)	Always	
	He/she thinks of things to do but never get	Never	Sometimes	Often	1	
BMQ23	around to doing them	(0)	(1)	(2)	I	
BMQ25	He/she feels he/she have got nothing done all-day	Never (0)	Sometimes (1)	Often (2)	1	
DNACCC	Ho/sho is dispreprized	Never	Sometimes	Often		
BMQ26	He/she is disorganized	(0)	(1)	(2)	(3)	
BMQ27	He/she has doubts about what he/she can achieve	Never (0)	Sometimes (1)	Often (2)	-	
BMQ28	He/she tries hard	Never (3)	Sometimes (2)	Often (1)	Always	
		Never	(2) Sometimes	Often		
BMQ31	He/she gets distracted from what He/she is doing	(0)	(1)	(2)		
				TOTA	AL SCORE	/57

EMOTIONAL REGULATION Short Form Questionnaire – CAREGIVER version (BREQ-SF17-C)

N°	Item description	Never	Sometimes	Often	Always	Assigne score
BREQ01	He/she has sudden mood swings	Never	Sometimes	Often	Always	
DKEQUI	ne/sile ilas suddeli illood swiligs	(0)	(1)	(2)	(3)	
BREQ03	He/she is unpredictable	Never	Sometimes	Often	Always	
DIVEQUO	Tie/site is dispredictable	(0)	(1)	(2)	(3)	
BREQ07	He/she cannot remember what happens when	Never	Sometimes	Often	Always	
BREQU7	he/she loses my temper	(0)	(1)	(1)	(2)	
DDEOOO	He /she feels upset for ne reason	Never	Sometimes	Often	Always	
BREQ09	He/she feels upset for no reason	(0)	(1)	(2)	(3)	
BREQ10	Ho/sho gots into a rago	Never	Sometimes	Often	Always	
DKEQIU	He/she gets into a rage	(0)	(1)	(2)	(3)	
BREQ14	He/she cries for no reason	Never	Sometimes	Often	Always	
DNEQ14	ווכן אוופ נוופא וטו ווט ופמאטוו	(0)	(1)	(2)	(3)	
BREQ15	He/she feels tired after he/she has been in a rage	Never	Sometimes	Often	Always	
BKEQIS	ne/sile leels tiled after fle/sile flas been ill a rage	(0)	(1)	(2)	(3)	
BREQ17	He/she feels anxious for no reason	Never	Sometimes	Often	Always	
DKEQ17	ne/site teets attxious for the reason	(0)	(1)	(2)	(3)	
BREQ19	He/she does not understand why he/she is upset	Never	Sometimes	Often	Always	
BREQ19	ne/sile does not understand why he/sile is upset	(0)	(1)	(2)	Always (3) Always (2) Always (3)	
BREQ20	He/she is a calm person	Never	Sometimes	Often	Always	
DREQZU	ne/sile is a callif person	(3)	(2)	(1)	(0)	
DDE034	He/she sulks when he/she has been in a bad	Never	Sometimes	Often	Always	
BREQ21	mood	(0)	(1)	(2)	(3)	
	It is hard for people to get through to him/her	Never	Sometimes	Often		
BREQ22	when he/she is upset	(0)	(1)	(1)	•	
	He/she breaks things he/she values when he/she	Never	Sometimes	Often		
BREQ23	is in a temper	(0)	(1)	(1)	-	
	•		1 1			
BREQ27	When he/she gets into a rage, everything	Never	Sometimes	Often	-	
	becomes a blur	(0)	(1)	(2)		
BREQ30	He/she gets upset	Never	Sometimes	Often	•	
		(0)	(1)	(2)		
BREQ31	When he/she is angry, he/she does not	Never	Sometimes	Often	-	
5.1.201	understand why	(0)	(1)	(2)		
BREQ32	He/she snaps at people	Never	Sometimes	Often	-	
	Tic/site situps at people	(0)	(1)	(2)	/2\	1

SOCIAL COGNITION Short Form Questionnaire – CAREGIVER version (BSCQ-SF13-C)

N°	Item description	Never	Sometimes	Often	Always	Assigned score
BSCQ01	He/she feels left out of conversations	Never	Sometimes	Often	Always	
BSCQUI	ne/she leels left out of conversations	(0)	(1)	(2)	(3)	
BSCQ03	People misunderstand him/her	Never	Sometimes	Often	Always	
взсцоз	People misunderstand minyrier	(0)	(1)	(1)	(2)	
DCCO04	He/she finds it hard to understand people on the	Never	Sometimes	Often	Always	
BSCQ04	telephone	(0)	(1)	(2)	(3)	
20000	He/she finds it hard to imagine things in the	Never	Sometimes	Often	Always	
BSCQ06	future	(0)	(1)	(1)	(2)	
20000		Never	Sometimes	Often	Always	
BSCQ09	He/she is amusing	(3)	(2)	(1)	(0)	
DCCO10	Halaha finda it band to made fuianda	Never	Sometimes	Often	Always	
BSCQ10	He/she finds it hard to make friends	(0)	(1)	(2)	(3)	
BSCQ11	He/she is relaxed around other people	Never	Sometimes	Often	Always	
bscq11	ne/site is relaxed around other people	(3)	(2)	(1)	(0)	
BSCQ12	He/she finds it hard to tell how people feel	Never	Sometimes	Often	Always	
bocqiz	They she finds it hard to tell how people leef	(0)	(1)	(1)	(2)	
BSCQ16	He/she prefers being on him/her own than with	Never	Sometimes	Often	Always	
bscq10	others	(0)	(1)	(1)	(2)	
BSCQ20	He/she feels comfortable in social situations	Never	Sometimes	Often	Always	
B3CQ2U	ne/site feets conflortable in social situations	(0)	(1)	(2)	(3)	
BSCQ24	People get cross with him/her for no reason	Never	Sometimes	Often	Always	
D3CQ24	reopie get cross with him/her for no reason	(0)	(1)	(2)	(3)	
BSCQ27	He/she enjoys other people's company	Never	Sometimes	Often	Always	
550027		(3)	(2)	(1)	(0)	
BSCQ28	He/she gets confused when talking in a group of	Never	Sometimes	Often	Always	
DOCUZO	people	(0)	(1)	(1)	(2)	
				TOTA	L SCORE	/34

DISINHIBITION Short Form Questionnaire – CAREGIVER version (BDQ-SF13-C)

N°	Item description	Never	Sometimes	Often	Always	Assigned score
BD001	He/she says things that people might consider	Never	Sometimes	Often	Always	
BDQ01	rude	(0)	(1)	(2)	(3)	
DD003	He/she tells people he/she does not know	Never	Sometimes	Often	Always	
BDQ02	personal things about himself/herself	(0)	(1)	(2)	(3)	
DD 003	It is hard to stop himself/herself from doing	Never	Sometimes	Often	Always	
BDQ03	things he/she knows he/she should not do	(0)	(1)	(2)	(3)	
DDOOF	He/she says rude things to people he/she does	Never	Sometimes	Often	Always	
BDQ05	not know very well	(0)	(1)	(2)	(3)	
DDOOG	He /che gets ever eveited	Never	Sometimes	Often	Always	
BDQ06	He/she gets over-excited	(0)	(1)	(2)	(3)	
BDQ14	He/she hugs and kisses strangers	Never	Sometimes	Often	Always	
DDQ14		(0)	(1)	(1)	(2)	
BDQ16	It is hard not to say something once he/she has	Never	Sometimes	Often	Always	
DDQ10	thought of it	(0)	(1)	(2)	(3)	
BDQ17	He/she talks too much	Never	Sometimes	Often	Always	
	,	(0)	(1)	(2)	(3)	
BDQ18	He/she is open about him/her sexual feelings	Never	Sometimes	Often	Always	
55410	towards people	(0)	(1)	(1)	(2)	
BDQ19	He/she is childish	Never	Sometimes	Often	Always	
55019	Trey sire is crimaisin	(0)	(1)	(1)	(2)	
BDQ22	He/she can go on a bit	Never	Sometimes	Often	Always	
	-,	(0)	(1)	(1)	(2)	
BDQ23	He/she is careful about what he/she says	Never	Sometimes	Often	Always	
-	, ,	(3)	(2)	(1)	(0)	
BDQ24	He/she can hold back him/her feelings	Never	Sometimes	Often	Always	
	<u> </u>	(3)	(2)	(1)	(0)	
ı						/=-
				TOTA	AL SCORE	/35

IMPULSIVITY Short Form Questionnaire – CAREGIVER version (BIQ-SF16-C)

N°	Item description	Never	Sometimes	Often	Always	Assigned score
PIO03	He/she is good at keeping secrets	Never	Sometimes	Often	Always	
BIQ02	He/she is good at keeping secrets	(2)	(1)	(1)	(0)	
BIQ03	He/she says things without thinking	Never	Sometimes	Often	Always	
ыциз	He/sile says tilligs without tilliking	(0)	(1)	(2)	(3)	
BIQ07	He/she gets angry all of a sudden	Never	Sometimes	Often	Always	
ыци	rie/sile gets aligiy ali ol a suddeli	(0)	(1)	(2)	(3)	
BIQ08	When he/she wants something, it is hard to wait	Never	Sometimes	Often	Always	
DIQUO	when he/she wants something, it is hard to wait	(0)	(1)	(2)	(3)	
BIQ09	He/she is a calm person	Never	Sometimes	Often	Always	
DIQUO	rie/sile is a callif person	(3)	(2)	(1)	(0)	
BIQ10	He/she upset people without realizing it	Never	Sometimes	Often	Always	
DIQIO	Tre/site upset people without realizing it	(0)	(1)	(2)	(3)	
DIO11	He/she does not realize that what he/she is doing	Never	Sometimes	Often	Always	
BIQ11	might be dangerous	(0)	(1)	(1)	(2)	
DIO43	Heliche her et litter heliche der er et er et	Never	Sometimes	Often	Always	
BIQ12	He/she buys things he/she does not need	(0)	(1)	(2)	(3)	
DIO14	He /ele a character bire /le a maind also at this as	Never	Sometimes	Often	Always	
BIQ14	He/she changes him/her mind about things	(0)	(1)	(2)	(3)	
21245	It is hard to stop himself/herself from doing things	Never	Sometimes	Often	Always	
BIQ15	he/she is not supposed to	(0)	(1)	(2)		
	He/she spends all of his/her money as soon as I	Never	Sometimes	Often		
BIQ16	get it	(0)	(1)	(1)		
		Never	Sometimes	Often		
BIQ19	He/she feels 'out of control.'	(0)	(1)	(2)		
		Never	Sometimes	Often		
BIQ24	He/she rushes into things	(0)	(1)	(2)		
		Never	Sometimes	Often		
BIQ25	He/she feels restless	(0)	(1)	(2)		
		Never	Sometimes	Often	(0) Always (3) Always (3) Always (3) Always (0) Always (3) Always (2) Always (3) Always (3) Always	
BIQ28	He/she gets over-excited	(0)	(1)	(2)		
	He/she does things on the 'spur of the	` '	` ′			
BIQ30		Never	Sometimes	Often		
	moment.'	(0)	(1)	(2)	(3)	
TOTAL SCORE						/45