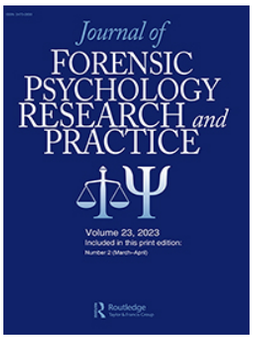

Routledge
Taylor & Francis Group

Journal of Forensic Psychology Research and Practice

ISSN: (Print) (Online) Journal homepage: https://www.tandfonline.com/loi/wfpp21

# A Natural Experiment Design Testing the Effectiveness of the IOP-29 and IOP-M in Assessing the Credibility of Reported PTSD Symptoms in Belgium

**Adélaïde Blavier, Alice Palma, Donald J. Viglione, Alessandro Zennaro & Luciano Giromini**

**To cite this article:** Adélaïde Blavier, Alice Palma, Donald J. Viglione, Alessandro Zennaro & Luciano Giromini (2023): A Natural Experiment Design Testing the Effectiveness of the IOP-29 and IOP-M in Assessing the Credibility of Reported PTSD Symptoms in Belgium, Journal of Forensic Psychology Research and Practice, DOI: 10.1080/24732850.2023.2203130

**To link to this article:** https://doi.org/10.1080/24732850.2023.2203130

Published online: 18 Apr 2023.

JOURNAL OF FORENSIC PSYCHOLOGY RESEARCH AND PRACTICE
https://doi.org/10.1080/24732850.2023.2203130



# A Natural Experiment Design Testing the Effectiveness of the IOP-29 and IOP-M in Assessing the Credibility of Reported PTSD Symptoms in Belgium

Adélaïde Blavier PhD[a], Alice Palma[b], Donald J. Viglione PhD[c], Alessandro Zennaro PhD[b], and Luciano Giromini PhD[b]

[a]Center of Psychological Traumatology and Forensic Psychology, University of Liège, Liège, Belgium; [b]Department of Psychology, University of Turin, Turin, Italy; [c]California School of Professional Psychology, Alliant International University, San Diego, California, USA

**ABSTRACT**

Sometimes forensic psychologists are asked to determine whether the symptoms of PTSD presented by the plaintiff are genuine or feigned. To this end, they may use both symptom validity tests (SVTs) and performance validity tests (PVTs), but SVTs are used far more frequently in these assessments. Thus, we conducted a natural experiment and administered an SVT (i.e., the IOP-29) and a PVT (i.e., the IOP-M) to 76 individuals instructed to feign PTSD and to 34 controls who self-reported exposure to a devastating flood several months earlier. The results confirm the utility of both measures in detecting feigned PTSD.

**KEYWORDS**

Malingering; PTSD; IOP-29; IOP-M; assessment

## Introduction

Determining whether or not posttraumatic stress disorder (PTSD) can be diagnosed in the case at hand is one of the most important issues in forensic litigation, especially in workers' compensation claims, personal injury lawsuits, or military disability claims (Young, 2016, 2017a, 2017b). Unfortunately, in most cases, this determination is far from straightforward, as diagnosing PTSD involves a degree of subjective inference (Vermetten et al., 2016) and – more relevant to our goal – because PTSD symptoms can be easily faked (Resnick et al., 2018). Indeed, it has been reported that participants who did not know the criteria for PTSD appeared to be suffering from this disorder on a checklist 86–94% of the time (Burges & McMillan, 2001).

Thankfully, several tools have been developed to help the forensic evaluator distinguish whether the claimant's reported symptoms of PTSD are more likely to be real or feigned. According to Larrabee (2012), these tools can be divided into (a) symptom validity tests (SVTs), when they assess the credibility of self-reported psychological problems, and (b) performance validity tests

**CONTACT** Luciano Giromini luciano.giromini@unito.it Department of Psychology, University of Turin, Via Verdi 10, Torino 10123, Italy

(PVTs), when they assess the credibility of observed performance on cognitive tasks. Traditionally, for assessing the credibility of presented PTSD symptoms, SVTs have been preferred over PVTs (Boccaccini & Brodsky, 1999; Fox & Vincent, 2020; Larrabee, 2012; N. Wisdom et al., 2010). Consistent with this position, Resnick et al. (2018), in Rogers and Bender (2018) popular book on malingering, list as "popular psychological measures used to differentiate between genuine and feigned PTSD" (p. 192) the validity scales of the Minnesota Multiphasic Personality Inventory – 2 (MMPI–2; Butcher et al., 2001) and 2-RF (MMPI–2–RF; Ben-Porath & Tellegen, 2008), the validity scales of the Personality Assessment Inventory (PAI; Morey, 1991, 2007), the Atypical Response (ATR) scale of the Trauma Symptom Inventory (TSI-2; Briere, 2011), and the Detailed Assessment of Posttraumatic Stress (DAPS; Briere, 2001). These tools are all SVTs. Yet, there is growing a consensus among experts that PVTs can also be helpful in detecting feigned PTSD (Fox & Vincent, 2020; Giromini, Viglione, et al., 2020; N. M. Wisdom et al., 2014; Shura et al., 2021). Indeed, from a theoretical perspective, PTSD is known to be associated with hypervigilance to threats and alterations in attention, memory, and processing speed, so it is reasonable to assume that the validity of presented cognitive problems also should be assessed (Merten et al., 2009). From an empirical perspective, a number of recently published simulation studies have shown that individuals instructed to feign PTSD indeed failed PVTs more often than controls (e.g, Carvalho et al., 2021; Giromini, Viglione, et al., 2020). Thus, PVTs do have the potential to be useful too, in the assessment of the credibility of presented PTSD symptoms.

It is also important to emphasize that emerging research suggests that SVTs and PVTs look at the credibility of the clinical presentation at hand from different angles, thereby providing nonredundant information (Giromini et al., 2022; Sabelli et al., 2021; Shura et al., 2021). For example, Giromini, Barbosa, et al. (2020) administered an SVT and a PVT to 100 volunteers instructed to feign mental illness and found that 82% of the false-negative classifications generated by the PVT were correctly classified (as positive) by the SVT, and 88% of the false-negative classifications generated by the SVT were correctly classified (as positive) by the PVT. Similarly, Shura et al. (2021) administered an SVT and a PVT to 417 veterans assessed for possible mild traumatic brain injury (mTBI) or PTSD and found that although 20.4% produced invalid results on the administered PVT (independent of SVT results) and 13.8% produced invalid results on the administered SVT (independent of PVT results), only 4.6% produced invalid results on both tests. The results of several other studies also lead to similar conclusions (e.g., Banovic et al., 2022; Carvalho et al., 2021; Gegner et al., 2021; Giromini, Viglione, et al., 2020; Sabelli et al., 2021; Šömen et al., 2021). Thus, converging research evidence currently suggests that assessees who fail the administered SVT(s) do not often fail the administered PVT(s) and, vice versa, those who fail the

administered PVT(s) do not often fail the administered SVT(s). Given this, it can be hypothesized that the administration of both types of validity tests is likely to result in a higher sensitivity for feigned PTSD than the administration of SVTs alone or PVTs alone.

### *This Study*

The Inventory of Problems – 29 (IOP-29; Viglione & Giromini, 2020) and its memory add-on module (IOP-M; Giromini, Viglione, et al., 2020) are a highly cost-effective approach to quickly assess both symptom and performance validity. Indeed, the IOP-29 is a 29-item, self-administered SVT that takes approximately five minutes to complete. The IOP-M is a 34-item, memory-based PVT module that uses the IOP-29 item content as its learning trial, so it can also be completed very quickly, in about five minutes. Thus, by using the IOP-29 with the IOP-M, the forensic assessor has the opportunity to obtain a very quick (10–15 minutes total) check of both symptom and performance validity without placing too much burden on the test-taker.

The IOP-29 has been extensively researched worldwide in recent years. Indeed, support for its validity and effectiveness has been demonstrated in the United States (Holcomb et al., 2022; Viglione et al., 2017), Canada (Abeare et al., 2021), United Kingdom (Winters et al., 2020), Australia (Gegner et al., 2021), Italy (DiGirolamo et al., 2021; Giromini, Viglione, et al., 2020; Roma et al., 2019), Brazil (Carvalho et al., 2021), Slovenia (Šömen et al., 2021), France (Boskovic et al., 2022), Portugal (Giromini et al., 2019), the Netherlands (Boskovic et al., 2022), and Lithuania (Ilgunaite et al., 2022). Taken together, the results of these studies suggest that the validity of the IOP-29 in discriminating between credible and noncredible psychopathological presentations is similar or compares favorably to that of lengthier instruments such as the Structured Inventory of Malingered Symptoms (SIMS; Smith & Burger, 1997) (see Boskovic et al., 2022; Giromini et al., 2018), the PAI (see Pignolo et al., 2021), or the MMPI-2 (see Giromini et al., 2019).

Unlike the IOP-29, the IOP-M has been little researched so far. In fact, apart from the introductory article by Giromini, Viglione, et al. (2020), there are only a few published studies in the literature that have used the IOP-M (i.e., Banovic et al., 2022; Bosi et al., 2022; Carvalho et al., 2021; Erdodi et al., 2023; Gegner et al., 2021; Holcomb et al., 2022; Šömen et al., 2021). Noteworthy, with the sole exception of Erdodi et al. (2023), which is a follow-up of Holcomb et al. (2022), all of these studies used nonclinical controls, so additional IOP-M research – especially with clinical or subclinical samples – would be beneficial. Moreover, little is known to date about how the forensic assessor should optimally integrate the results of the IOP-29 with those of the IOP-M. For instance, how should the forensic evaluator interpret a potential

discrepancy between the IOP-29 and IOP-M results? What if the IOP-29 is credible but the IOP-M is not? What if the opposite pattern occurs?

The current study aimed to address these gaps in the literature and to contribute to the growing body of research on the potential benefits of using also PVTs, in addition to SVTs, in assessing the credibility of presented PTSD symptoms. In addition, because no publication had previously reported on the validity of the IOP-29 and IOP-M in Belgium, our study also sought to contribute to the investigation of the applicability of the IOP instruments in this cultural context. It should be pointed out that because the majority of PTSD feigners tend to fake emotional problems (e.g., distress, anxiety, etc.), whereas only a few tend to fake cognitive problems (e.g., attention, memory, etc.) (Fox & Vincent, 2020), we expected that the IOP-29 would yield notably larger effect sizes than the IOP-M in detecting feigned PTSD. However, consistent with the hypothesis that SVTs and PVTs yield nonredundant information in that they look at the same individuals from different perspectives (Giromini, Viglione et al., 2020), we also expected that the IOP-M would serve to correctly classify some of the false-negative results of the IOP-29 as positive/noncredible. That is, we did not expect the IOP-M to perform well when considered alone, but we did expect it to provide incremental validity when considered in conjunction with the IOP-29.

## Materials and methods

This study was conducted in Liège, Belgium, between March 2022 and June 2022. Because a devastating flood had occurred in this city less than a year earlier (i.e., July 2021), we opted to use a natural experiment design to examine the effectiveness of the IOP-29 and IOP-M in assessing the credibility of reported PTSD symptoms. Specifically, at intake, participants were asked if they suffered a physical injury, experienced psychological problems, or sought psychological treatment as a result of that event. If they answered in the affirmative to any of these questions, they were assigned to the control group and asked to complete a series of self-report measures honestly. If they did not answer in the affirmative, they were assigned to an experimental group and asked to complete the same measures while pretending to have PTSD. In addition to the IOP-29 and IOP-M, participants in both groups also completed the PTSD Checklist for DSM–5 (PCL-5 Standard Form, Past-Month version; Weathers et al., 2013). For the control group, the PCL-5 served to assess the extent to which our control participants were currently experiencing PTSD symptoms; for the experimental group, it served to confirm that our instructions were effective in helping participants pretend that they were currently experiencing PTSD.

### *Participants*

This study was conducted on a Belgian community sample that was heterogeneous in age and education. Inclusion criteria were French as a first language, age between 18 and 65 years, and ability to read and sign an informed consent form. Individuals with schizophrenia spectrum disorders, a history of schizophrenia spectrum disorders, or severe brain injury or cognitive disability, and individuals taking psychotropic drugs were not allowed to participate.

The initial sample included 117 adult volunteers. Of these, 35 reported that they had (a) suffered a physical injury from the July 2021 flooding in Liège, (b) experienced psychological problems after this event, and/or (c) sought psychological treatment due to this event. Accordingly, these 35 participants were assigned to the control group, and asked to answer the tests truthfully ("*Flood Exposure*" group). The remaining 82 participants were assigned to the experimental group and asked to answer the tests as if they were currently suffering from PTSD ("*PTSD Feigning*" group). However, one participant in the *Flood Exposure* group and six participants in the *PTSD Feigning* group were then excluded from the analysis because they had answered incorrectly on the posttest manipulation check (see below). Accordingly, the final sample size consisted of 110 participants, 34 were in the *Flood Exposure* group and 76 in the *PTSD Feigning* group.

As shown in Table 1, the *Flood Exposure* group was significantly older and contained significantly more women than the *PTSD Feigning* group. Therefore, a set of post-hoc analyses were conducted to investigate the effects of these age and gender differences on the main results of the study (see below). Conversely, the two groups were well balanced in terms of education.

As for the impact of the target event of this study (i.e., the flooding in Liège in July 2021) on the lives of the participants who were instructed to respond honestly (*Flood Exposure* group), the following statistics were observed: 70.6% reported having been in Liège on that day, 8.8% reported having suffered a physical injury due to that event, 88.2% reported having experienced psychological distress in the first month after that event, 38.2% reported having experienced psychological distress even after the first month after that event, and 44.1% reported having sought psychological treatment after (and because of) that event. The scores of PCL-5 ranged in this group from 2 to 55, with an average score of 20.6 ($SD = 14.0$). Noteworthy, only seven people (i.e., 20.6%) scored $\geq 31$. Accordingly, the majority of participants in the *Flood Exposure* group were likely not experiencing PTSD symptoms related to the flood event at the time we conducted our study. In contrast (but as expected), the average PCL-5 score of the *PTSD Feigning* group was a notably higher 49.9 ($SD = 10.5$) and the vast majority of participants in this group, i.e., 93.4%, achieved a score $\geq 31$. Thus, it was concluded that overall, our instructions were effective in

**Table 1.** Characterization of the groups ($N = 110$).

| | Flood Exposure ($n = 34$) | PTSD Feigning ($n = 76$) |
|---|---|---|
| Age, $t(108) = 3.04$, $p < .01$, $d = 0.63$ | | |
| *M* | 39.1 | 31.4 |
| *SD* | 13.4 | 11.8 |
| Gender, $Phi = 0.20$, $p = .03$ | | |
| *F* | 28 (82.4%) | 47 (61.8%) |
| *M* | 6 (17.6% | 29 (38.2%) |
| Education, $Chi^2_{(2)} = 4.29$, $p = .12$ | | |
| *High school diploma* | 6 (17.6%) | 16 (21.1%) |
| *Bachelor's degree* | 18 (52.9%) | 23 (30.3%) |
| *Master's degree* | 9 (26.5%) | 30 (39.5%) |
| *Ph.D.* | 1 (2.9%) | 4 (5.3%) |
| *Other* | 0 (0.0%) | 3 (3.9%) |
| Physically present in Liège on 07/15/21 | | |
| *Yes* | 24 (70.6%) | 40 (52.6%) |
| *No* | 10 (29.4%) | 36 (47.4%) |
| Experienced physical injury | | |
| *Yes* | 3 (8.8%) | 0 (0.0%) |
| *No* | 31 (91.2%) | 76 (100.0%) |
| Experienced psychological problems in the 1st month | | |
| *Yes* | 30 (88.2%) | 0 (0.0%) |
| *No* | 4 (11.8%) | 76 (100.0%) |
| Experienced psychological problems after the 1st month | | |
| *Yes* | 13 (38.2%) | 0 (0.0%) |
| *No* | 21 (61.8%) | 76 (100.0%) |
| Sought psychological treatment | | |
| *Yes* | 15 (44.1%) | 0 (0.0%) |
| *No* | 19 (55.9%) | 76 (100.0%) |

Note. For the calculation of the $Chi^2$ statistic, categories for which there were fewer than five cases were excluded.

helping participants in the *PTSD Feigning* group pretend that they were currently experiencing PTSD.

## Measures

The Inventory of Problems – 29 (IOP-29; Viglione & Giromini, 2020). The IOP-29 is a 29-item self-administered SVT that takes about five minutes to administer and another five minutes to score. All but two of its items offer three response options, i.e., *True*, *False*, and *Doesn't make sense*. The remaining two items are mathematical/logical problems with open-ended response options. The responses provided by the test-taker to these 29 items are elaborated online by the IOP-29 scoring platform (www.iop-test.com) to generate the False Disorder probability Score (FDS), the chief feigning index of the IOP-29. Derived via logistic regression analyses (Viglione et al., 2017), the IOP-29 FDS ranges from zero to one, with higher scores indicating less credible presentations.

According to the test manual (Viglione & Giromini, 2020), the standard IOP-29 cutoff score to obtain the best balance between sensitivity and specificity is FDS ≥.50. In contrast, to minimize the risk of false positive classifications and ensure a specificity ≥.90%, a more conservative cut off

recommended in the IOP-29 manual is FDS ≥.65; to minimize the risk of false negative classifications and ensure a sensitivity ≥.90%, a more liberal cutoff recommended in the IOP-29 manual is FDS ≥.30. A recent quantitative literature review confirms these recommendations and suggests that these cutoff scores yield similar results in terms of validity and classification accuracy in different countries and under different diagnostic conditions (Giromini & Viglione, 2022).

The Inventory of Problems – Memory module (IOP-M; Giromini, Viglione, et al., 2020). The IOP-M is an optional IOP-29 "add-on" component consisting of 34 two-alternative forced-choice items assessing incidental memory recognition. Each item presents a word or short phrase from the IOP-29 text (target) and a word or short phrase not from the IOP-29 text (foil). The test-taker's task is to identify the words or short phrases taken from the IOP-29, so the IOP-M is essentially a PVT. However, unlike the typical memory-based PVT, the IOP-M focuses on *incidental* memory recognition because there is no indication prior to the presentation of the IOP-M items that the test-taker needs to make an effort to remember anything.

The rationale behind the IOP-M is that individuals with intact cognitive abilities or mild cognitive impairment should be able to respond correctly to all or nearly all items of the IOP-M (Giromini, Viglione, et al., 2020). In contrast, individuals who feign neuropsychological problems (e.g., mild traumatic brain injury) often fail a substantial number of IOP-M items. Thus, according to Giromini, Viglione, et al. (2020) and in agreement with subsequent studies (Banovic et al., 2022; Bosi et al., 2022; Carvalho et al., 2021; Erdodi et al., 2023; Gegner et al., 2021; Šömen et al., 2021), it is unlikely that an individual without moderate or severe cognitive problems will correctly answer fewer than 30 of the 34 items of the IOP-M, making the standard cutoff score for the IOP-M "≤ 29." However, because the IOP-M is a new test, additional research on its optimal cutoff would be beneficial, so in this study we examined the effectiveness of five different cutoff scores, from IOP-M ≤ 31 to IOP-M ≤ 27.

### Procedure

First, the research project was reviewed and approved by the ethics committee of the institution where the senior author of this article works. Then, potential participants were informed of the opportunity to volunteer for this study through word of mouth, flyers, and social media. Those who showed interest in volunteering were invited to a face-to-face meeting with one of our experimenters in a quiet room at the University of Liège. Upon arrival, the inclusion and exclusion criteria (see above) were reviewed again and those who qualified to participate in this study signed an informed consent form. They were then given a short form asking questions about their involvement in the July 2021

flood. As mentioned earlier, those who self-reported having suffered a physical injury as a result of the event, having experienced psychological problems after the event, and/or having sought psychological treatment as a result of the event were assigned to the *Flood Exposure* group; all others were assigned to the *PTSD Feigning* group.

Participants in the *Flood Exposure* group were then asked to complete the IOP-29 (first) and the IOP-M (next) under standard instructions, i.e., honestly. In contrast, participants in the *PTSD Feigning* group were presented with a vignette summarizing typical PTSD symptoms and a scenario describing why someone might feign suffering from PTSD prior to being given the IOP instruments. In addition, they were informed that if they could obtain test results similar to a person actually suffering from PTSD and the tests did not classify their presentation as "noncredible," they would qualify for a prize draw worth €20. Finally, they were also warned that their presentation would not be credible if they were overly dramatic about their symptoms, so they were told not to "over-do it." For an English translation of the instructions given to the *PTSD Feigning* group, see Appendix A.

After completing the IOP-M, all participants were asked to complete – honestly – a brief demographic form and a posttest manipulation check. The demographic form included questions on their gender, age, and education. In the posttest manipulation check, participants were asked whether, during the experiment, they responded (a) honestly or (b) feigning a mental disorder. As mentioned earlier, data from participants who did not respond according to their assigned role were excluded from statistical analyses.

### Data analysis

First, we examined the validity and effectiveness of the IOP-29 and the IOP-M in discriminating experimental feigners of PTSD from controls. To do so, we calculated an independent-samples *t*-test to compare the average IOP-29 and IOP-M scores of the *Flood Exposure* and *PTSD Feigning* groups and examined classification accuracy statistics, i.e., specificity, sensitivity, overall correct classification, and AUC. Next, we focused on incremental validity and performed hierarchical logistic regression analyses with group (0 = *Flood Exposure*; 1 = *PTSD Feigning*) as criterion, IOP-29 FDS score as predictor in the first step, and both IOP-29 and IOP-M scores as predictors in the second step.

## Results

Table 2 details the *t*-test analyses comparing the average IOP-29 and IOP-M scores in the *Flood Exposure* and *PTSD Feigning* groups. As expected, the *PTSD Feigning* group scored significantly higher on the IOP-29 FDS and

**Table 2.** IOP-29 and IOP-M scores in the two groups: t-test results.

| | Flood Exposure | | PTSD Feigning | | | | | |
|---|---|---|---|---|---|---|---|---|
| | *M* | *SD* | *M* | *SD* | *t* | *df* | *p* | *d* |
| IOP-29 FDS | .19 | .19 | .74 | .21 | 13.2 | 108 | <.001 | 2.72 |
| IOP-M (# of correct) | 33.7 | 0.8 | 29.4 | 4.8 | 7.6 | 83.2 | <.001 | 1.07 |

significantly lower on the IOP-M compared with the *Flood Exposure* group. Also as expected, the IOP-29 yielded a larger Cohen's *d* effect size than the IOP-M. More specifically, based onRogers et al. (2003) benchmarks for characterizing *d* values from simulation studies, the IOP-29 produced a "very large" effect size (Cohen's $d = 2.72$) whereas the IOP-M produced a "moderate" effect size (Cohen's $d = 1.07$). For a graphical representation of the full distribution of IOP-29 and IOP-M scores in the two groups, see Figure 1.

The results of the classification accuracy analyses are shown in Table 3. As for the IOP-29, the conservative (FDS ≥ .65) and standard (FDS ≥ .50) cut scores yielded the same level of specificity (i.e., 94%), but the latter yielded higher sensitivity values (84% versus 72%). As expected, the liberal cut score (FDS ≥ .30) yielded a sensitivity of ≥ 90%, namely 95%. With respect to the PVT module of the IOP-29, considering the previously recommended cut score of ≤ 29, the IOP-M yielded perfect specificity (i.e., 100%) with a sensitivity of 45%. Therefore, the more conservative cut scores examined in this study, i.e., ≤ 28 and ≤ 27, did not further improve specificity, but only slightly decreased sensitivity. Conversely, the use of more liberal cut scores improved sensitivity only slightly and was associated with a small decrease in specificity.

The results of our incremental validity analyses are shown in Tables 4, 5, and Figure 2. Specifically, Table 4 shows that although the *B* value of the IOP-M was only marginally significant, the model improved significantly when the IOP-M was added in the second block of a logistic regression to predict group membership (0 = *Flood Exposure*; 1 = *PTSD Feigning*), compared with a first block in which only the IOP-29 was entered. To better assess how classification accuracy changes when IOP-29 results are integrated with those of IOP-M, we examined two different criteria for determining invalidity/noncredibility. The first, more liberal, criterion required *either* IOP-29 FDS ≥.50 *or* IOP-M correct responses ≤ 29 to qualify as invalid/noncredible. A second, more conservative criterion required *both* IOP-29 FDS ≥.50 *and* the IOP-M correct responses ≤ 29 to qualify as invalid/noncredible. As shown in Table 5, the first of these two criteria resulted in excellent classification accuracy, better than that achieved by using of the IOP-29 alone (see Table 3). Consistent with this observation, Figure 2 shows that the two false-positive classifications of IOP-29 were correctly classified as valid/credible by IOP-M (top of Figure 2, first quadrant), and almost half of the false-negative classifications of IOP-29 were classified as

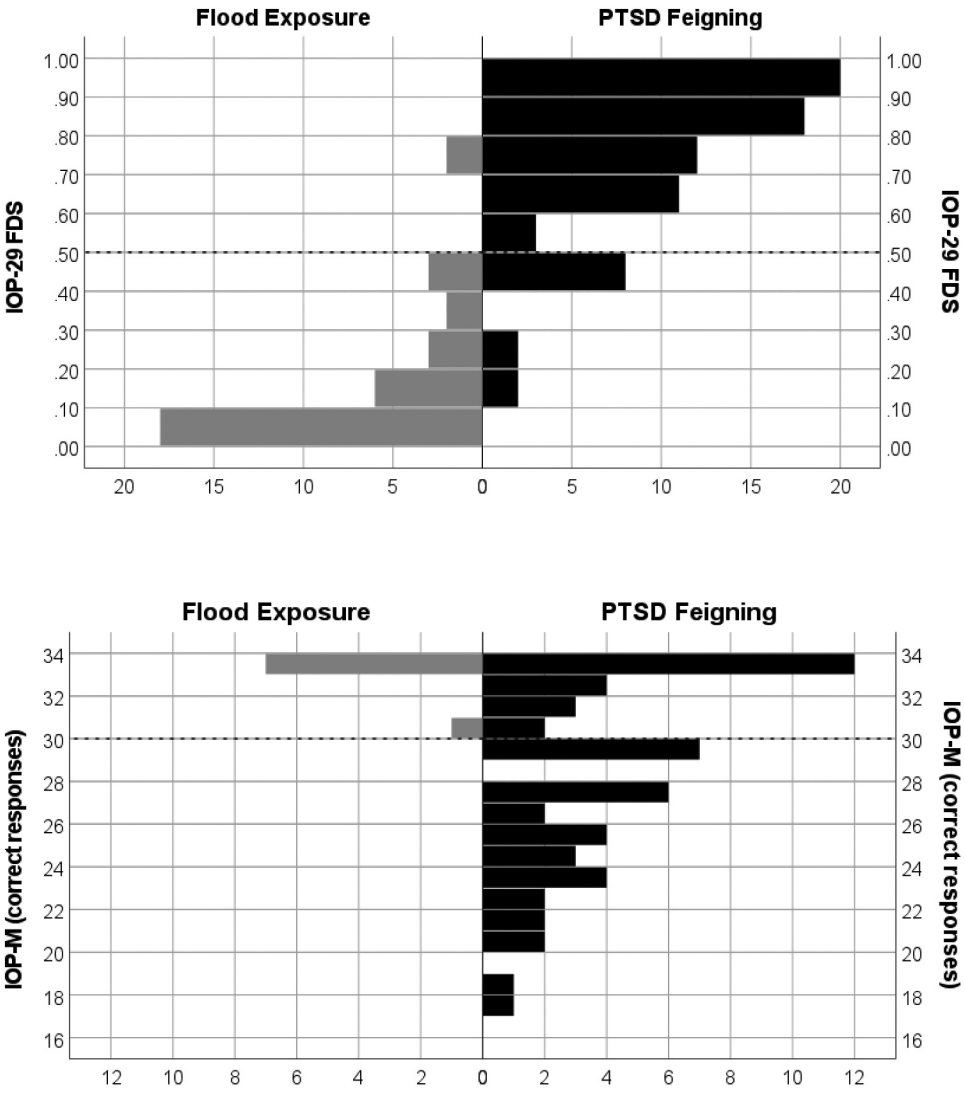


**Figure 1.** Histograms of IOP-29 and IOP-M scores split by group.

**Table 3.** Classification accuracy.

| | AUC (SE) | Specificity | Sensitivity | OCC |
|---|---|---|---|---|
| IOP-29 | .96 (.02) | | | |
| FDS ≥ .65 | | .94 | .72 | .79 |
| FDS ≥ .50 | | .94 | .84 | .87 |
| FDS ≥ .30 | | .79 | .95 | .90 |
| IOP-M | .81 (.04) | | | |
| # of correct≤31 | | .97 | .51 | .65 |
| # of correct≤30 | | .97 | .47 | .63 |
| # of correct≤29 | | 1.00 | .45 | .62 |
| # of correct≤28 | | 1.00 | .36 | .55 |
| # of correct≤27 | | 1.00 | .36 | .55 |

**Table 4.** Incremental validity.

| | Step 1 (IOP-29 only) | Step 2 (IOP-29 & IOP-M) |
|---|---|---|
| $Chi^2$ of the model | 82.03** | 89.85** |
| $\Delta$ $Chi^2$ | 82.03** | 7.82** |
| *B* IOP-29 (SE) | 8.95** | 7.54** |
| *B* IOP-M (SE) | - | −0.49(*) |

**$p < .01$; *$p < .05$; (*) $p < .10$.

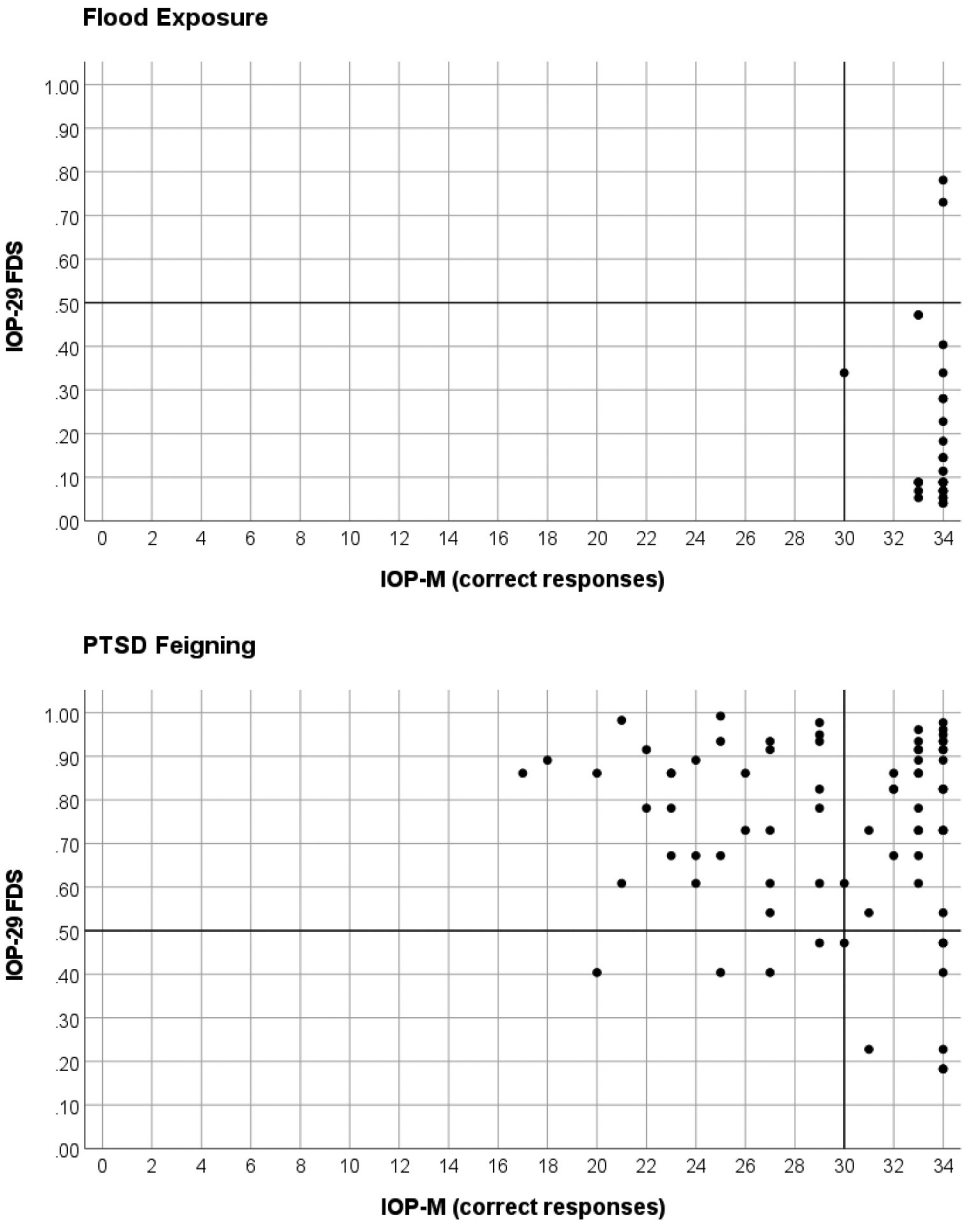


**Figure 2.** Scatterplots of IOP-29 versus IOP-M split by group.

**Table 5.** Battery-wise classification accuracy for different determination rules.

| Criterion to establish invalidity | Specificity | Sensitivity | OCC |
|---|---|---|---|
| (IOP-29 FDS ≥.50) *or* (IOP-M ≤ 29) | .94 | .90 | .91 |
| (IOP-29 FDS ≥.50) *&* (IOP-M ≤ 29) | 1.00 | .40 | .64 |

invalid/noncredible by IOP-M (bottom of Figure 2, third quadrant). Of note, the correlation between the IOP-29 FDS and the IOP-M was $r = -.125$ ($p = .48$) in the *Flood Exposure* group and $r = -.085$ ($p = .47$) in the *PTSD Feigning* group. That is, although the IOP-29 and the IOP-M were not correlated, both contributed to accurately classifying our participants' results as valid/credible or invalid/noncredible. Indeed, the independence of these two measures contributes to their incremental validity.

### *Additional analyses*

As mentioned earlier (see Participants), the *Flood Exposure* and *PTSD Feigning* groups differed on age and gender (Table 1). Therefore, to evaluate whether these demographic differences may be confounds, we tested the correlation of IOP-29 and IOP-M scores with age and gender (dummy code, with 0 = M and 1 = F). These correlations revealed that IOP-29 and IOP-M scores were not influenced by the age or gender of the respondents. Indeed, with respect to the IOP-29, its correlation to age was $r = -.081$ ($p = .65$) within the *Flood Exposure* group and $r = -.066$ ($p = .57$) within the *PTSD Feigning* group; its correlation to gender was $r = -.252$ ($p = .15$) within the *Flood Exposure* group and $r = -.030$ ($p = .80$) within the *PTSD Feigning* group. Similarly, the IOP-M correlated with age at $r = -.233$ ($p = .19$) within the *Flood Exposure* group and at $r = .164$ ($p = .16$) within the *PTSD Feigning* group; its correlation to gender was $r = -.006$ ($p = .97$) within the *Flood Exposure* group and $r = -.165$ ($p = .16$) within the *PTSD Feigning* group. That is, neither the participants' age nor their gender correlated significantly with their IOP-29 and IOP-M scores.

## Discussion

Discriminating feigned from genuine PTSD symptoms is of paramount importance in certain forensic mental health assessments. To this end, symptom validity tests (SVTs) are known to be particularly useful, but performance validity tests (PVTs) are likely to have potential too. This study examined the effectiveness of a particularly cost-effective combo that allows to rapidly assess both symptom and performance validity. Specifically, we administered the Inventory of Problems – 29 (IOP-29) along with its add-on memory module (IOP-M) to 76 individuals who were instructed to feign PTSD (*PTSD Feigning* group) and to 34 controls who self-reported exposure to a devastating flood several months earlier (*Flood Exposure* group). As expected, the SVT component of this combo, i.e., the IOP-29, yielded a larger effect size than the PVT

component, i.e., the IOP-M, in discriminating credible from noncredible presentations. However, using the IOP-29 in conjunction with the IOP-M yielded incremental validity over using the IOP-29 alone. In fact, the IOP-M correctly classified all false-positive classifications of the IOP-29 as negative (or credible) and about half of the false-negative classifications of the IOP-29 as positive (or noncredible). Taken together, these results confirm the potential utility of using PVTs in forensic mental health assessments focused on PTSD and provide further support for the validity and efficacy of the IOP-29 and IOP-M.

As for the IOP-29, Giromini and Viglione (2022) quantitative literature review found an average Cohen's *d* effect size of 3.02 (*SD* = 0.99), with the standard IOP-29 cutoff score of FDS ≥.50 showing an average specificity of .92 (*SD* = 0.06) and an average sensitivity of .86 (*SD* = 0.07). In our study, Cohen's *d* was 2.71 and the IOP-29 cutoff score of FDS ≥.50 yielded a specificity of .94 and a sensitivity of .84. Considering that our study is the first to examine the IOP-29 in Belgium, the similarity between our findings and those of Giromini and Viglione (2022) suggests that the IOP-29 is likely to perform similarly in Belgium as in other countries.

In this study, the IOP-M generated a Cohen's d of 1.07, and the previously recommended cutoff score of ≤ 29 (Giromini, Viglione, et al., 2020) yielded a specificity of 1.00 and a sensitivity of .45. To our knowledge, there is currently only one other study in the literature informing on the effectiveness of the IOP-M in the detection of feigned PTSD. More specifically, Carvalho et al. (2021) administered the Brazilian-Portuguese versions of the IOP-29 and IOP-M to 100 experimental feigners of PTSD and 101 nonclinical controls. In this study, the IOP-M yielded a Cohen's *d* of 0.97, and using ≤ 29 as cut score yielded a specificity of 1.00 and a sensitivity of .37. As with the IOP-29, also for the IOP-M the results thus appear to be highly replicable when going from one study to another. Besides, the fact that our trauma-exposed group scored near-ceiling on the IOP-M is noteworthy, as it provides valuable (albeit preliminary) evidence for the robustness of the IOP-M to PTSD-related genuine memory deficits.

The fact that the sensitivity of the IOP-M was lower than that of the IOP-29 (.84 *vs*. .45) was not surprising, as we had indeed expected that the majority of PTSD feigners would likely fake emotional problems (e.g., distress, anxiety, etc.), whereas only a few would fake cognitive problems (e.g., attention, memory, etc.) (Fox & Vincent, 2020). What is perhaps more remarkable and less obvious about our findings is that the records classified as noncredible by the IOP-M were not necessarily the same as those classified as noncredible by the IOP-29. Indeed, the correlation between the IOP-29 FDS and the IOP-M within the *PTSD Feigning* group was as weak as $r = -.085$ ($p = .47$), and Figure 2 shows that nearly half of the false-negative classifications by the IOP-29 were classified as invalid/noncredible by IOP-M. The results of the

logistic regression analyses presented in Table 4 also confirm that using the IOP-M together with the IOP-29 improves classification accuracy compared to using the IOP-29 alone. More generally, we argue that this finding is consistent with emerging research suggesting that the use of PVTs together with SVTs – not only in the assessment of cognitive impairment but also in psychiatric disorders or emotional problems – likely results in stronger signal detection compared with the use of SVTs alone (Fox & Vincent, 2020; Green et al., 1996 Pivovarova et al., 2009; Sabelli et al., 2021; Shura et al., 2021).

Since both the IOP-29 and the IOP-M are very short and take very little time, if these findings are confirmed in future studies, one might consider administering them early in the assessment process to select subsequent tests based on their results. More precisely, it might be useful to use them as a rapid and cost-effective screening of both symptom and performance validity: If the IOP-29 provides a noncredible result, it might be beneficial to administer some additional SVTs; if the IOP-M provides a noncredible result, it might be beneficial to administer some additional PVTs. If both the IOP-29 and IOP-M are passed, the overall presentation is most likely valid. Indeed, Table 5 shows that only 6% of individuals in the *Flood Exposure* group failed at least one of these two validity checks, and only 10% of individuals in the *PTSD Feigning* group passed both of them.

Of course, these recommendations should be considered preliminary and provisional, as there are several limitations to this study that must be considered. First, our control group can be considered a surrogate for a clinical sample, but it is not a clinical sample. This is because although all participants in this group ($n = 34$) were previously exposed to a potentially traumatic event, only 20.6% of them scored ≥ 31 on the PCL-5, making it likely that the majority of them did not suffer from PTSD at the time our study was conducted. Accordingly, the results reported in this article may have overestimated the true specificity (Giromini et al., 2022). Somewhat relatedly, the relatively small sample size is also a notable limitation of this study, which naturally raises questions regarding the generalizability of our results. Although our results are similar to those presented in other similar studies, additional future replications are certainly needed. In addition, it is important to emphasize that, as with any other simulation study, the external validity of our research may be questioned for several reasons: There is no guarantee that malingerers in applied (clinical and forensic) contexts would respond as our experimental feigners did in our study; the incentives and risks in applied contexts are extremely different from those used in our experimental context; etc. (Rogers & Bender, 2018).

Despite all these important limitations, our study nevertheless has the merit of contributing to the growing research base suggesting that combining the results of SVTs with those of PVTs may be particularly beneficial, especially in assessing the credibility of PTSD symptoms. In addition, the use of a natural

experiment design can also be characterized a merit, as it represents a methodological innovation and an improvement over the classical experimental malingering paradigm, in which healthy volunteers serve as controls. Finally, our study is also a novel contribution to the rapidly accumulating research evidence supporting the efficacy and validity of the IOP-29 and IOP-M.

## Disclosure statement

The first, second, and fourth authors declare that they have no conflict of interest to disclose. In contrast, the third (Donald Viglione) and fifth (Luciano Giromini) authors report that they are members of the LLC that owns the rights to the IOP-29 and IOP-M.

## Data availability statement

Authors are willing to share their data set upon reasonable request. To obtain the data set associated with this article, please contact the corresponding author at luciano.giromini@unito.it

## Ethical approval

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. The Institutional Review Board of the University of Turin has approved the project on Feb 28, 2022 (Prot. n. 0169445).

## Informed consent

Informed consent was obtained from all individual participants included in the study.

## References

Abeare, K., Razvi, P., Sirianni, C. D., Giromini, L., Holcomb, M., Cutler, L., Kuzmenka, P., & Erdodi, L. A. (2021). Introducing alternative validity cutoffs to improve the detection of non-credible symptom report on the brief. *Psychological Injury and Law*, *14*(1), 2–16. https://doi.org/10.1007/s12207-021-09402-4

Banovic, I., Filippi, F., Viglione, D. J., Scrima, F., Zennaro, A., Zappalà, A., & Giromini, L. (2022). Detecting coached feigning of schizophrenia with the Inventory of Problems–29 (IOP-29) and its memory module (IOP-M): A simulation study on a French community sample. *International Journal of Forensic Mental Health*, *21*(1), 37–53. https://doi.org/10.1080/14999013.2021.1906798

Ben-Porath, Y. S., & Tellegen, A. (2008). *The Minnesota Multiphasic Personality Inventory-2 restructured form: Manual for administration, scoring, and interpretation*. University of Minnesota.

Boccaccini, M. T., & Brodsky, S. L. (1999). Diagnostic test usage by forensic psychologists in emotional injury cases. *Professional Psychology, Research and Practice*, *30*(3), 253–259. https://doi.org/10.1037/0735-7028.30.3.253

Bosi, J., Minassian, L., Ales, F., Akca, A. Y. E., Winters, C., Viglione, D. J., Zennaro, A., & Giromini, L. (2022). The sensitivity of the IOP-29 and IOP-M to coached feigning of depression and mTBI: An online simulation study in a community sample from the United Kingdom. *Applied Neuropsychology Adult*, 1–13. Advance online publication. https://doi.org/10.1080/23279095.2022.2115910

Boskovic, I., Akca, A. Y. E., & Giromini, L. (2022). Symptom coaching and symptom validity tests: An analog study using the structured inventory of malingered symptomatology, self-report symptom inventory, and inventory of Problems-29. *Applied Neuropsychology Adult*, 1–13. Advance online publication. https://doi.org/10.1080/23279095.2022.2057856

Briere, J. (2001). *Detailed assessment of posttraumatic stress professional manual*. Psychological Assessment Resources.

Briere, J. (2011). *Trauma Symptom Inventory-2nd edition (TSI-2) professional manual*. Psychological Assessment Resources.

Burges, C., & McMillan, T. (2001). The ability of naïve participants to report symptoms of post-traumatic stress disorder. *British Journal of Clinical Psychology*, *40*(2), 209–214. https://doi.org/10.1348/014466501163544

Butcher, J. N., Graham, J. R., Ben-Porath, Y. S., Tellegen, A. M., & Dahlstrom, W. G. (2001). *Minnesota Multiphasic Personality Inventory-2 (MMPI-2): Manual for administration and scoring. rev. ed*. University of Minneapolis Press.

Carvalho, L., Reis, A., Colombarolli, M. S., Pasian, S. R., Miguel, F. K., Erdodi, L. A., Viglione, D. J., & Giromini, L. (2021). Discriminating feigned from credible PTSD symptoms: A validation of a Brazilian version of the Inventory of Problems-29 (IOP-29). *Psychological Injury and Law*, *14*(1), 58–70. https://doi.org/10.1007/s12207-021-09403-3

DiGirolamo, M., Giromini, L., Bosi, J., Warmelink, L., La Scala, I., Loiacono, C., Miraglia, F., & Zennaro, A. The role played by theory of mind and empathy in the feigning of psychopathology. (2021). *International Journal of Forensic Mental Health*, *21*(4), 334–347. Epub ahead of print. https://doi.org/10.1080/14999013.2021.2007432

Erdodi, L., Calamia, M., Holcomb, M., Robinson, A., Rasmussen, L., & Bianchini, K. (2023). M is for performance validity: The IOP-M provides a cost-effective measure of the credibility of memory deficits during neuropsychological evaluations. *Journal of Forensic Psychology Research and Practice*, 1–17. Epub ahead of Print. https://doi.org/10.1080/24732850.2023.2168581

Fox, K. A., & Vincent, J. P. (2020). Types of malingering in PTSD: Evidence from a psychological injury paradigm. *Psychological Injury and Law*, *13*(1), 90–104. https://doi.org/10.1007/s12207-019-09367-5

Gegner, J., Erdodi, L. A., Giromini, L., Viglione, D. J., Bosi, J., & Brusadelli, E. An Australian study on feigned mTBI using the Inventory of Problems – 29 (IOP-29), its Memory Module (IOP-M), and the Rey Fifteen Item Test (FIT). (2021). *Applied Neuropsychology Adult*, *29*(5), 1221–1230. Epub ahead of Print. https://doi.org/10.1080/23279095.2020.1864375

Giromini, L., Barbosa, F., Coga, G., Azeredo, A., Viglione, D. J., & Zennaro, A. (2020). Using the inventory of problems–29 (IOP-29) with the Test of Memory Malingering (TOMM) in symptom validity assessment: A study with a Portuguese sample of experimental feigners. *Applied Neuropsychology Adult*, *27*(6), 504–516. https://doi.org/10.1080/23279095.2019.1570929

Giromini, L., Carfora Lettieri, S. C., Zizolfi, S., Zizolfi, D., Viglione, D. J., Brusadelli, E., Perfetti, B., diCarlo, D. A., & Zennaro, A. (2019). Beyond rare-symptoms endorsement: A clinical comparison simulation study using the Minnesota Multiphasic Personality Inventory-2 (MMPI-2) with the Inventory of Problems-29 (IOP-29). *Psychological Injury and Law*, *12*(3–4), 212–224. https://doi.org/10.1007/s12207-019-09357-7

Giromini, L., & Viglione, D. J. (2022). Assessing negative response bias with the Inventory of Problems-29 (IOP-29): A quantitative literature review. *Psychological Injury and Law*, *15*(1), 79–93. https://doi.org/10.1007/s12207-021-09437-7

Giromini, L., Viglione, D. J., Pignolo, C., & Zennaro, A. (2018). A clinical comparison, simulation study testing the validity of SIMS and IOP-29 with an Italian sample. *Psychological Injury and Law*, *11*(4), 340–350. https://doi.org/10.1007/s12207-018-9314-1

Giromini, L., Viglione, D. J., Pignolo, C., & Zennaro, A. (2020). An Inventory of Problems–29 Sensitivity Study Investigating Feigning of Four Different Symptom Presentations via Malingering Experimental Paradigm. *Journal of Personality Assessment*, *102*(4), 563–572. https://doi.org/10.1080/00223891.2019.1566914

Giromini, L., Viglione, D. J., Zennaro, A., Maffei, A., & Erdodi, L. A. (2020). SVT meets PVT: Development and initial validation of the Inventory of Problems–Memory (IOP-M). *Psychological Injury and Law*, *13*(3), 261–274. https://doi.org/10.1007/s12207-020-09385-8

Giromini, L., Young, G., & Sellbom, M. (2022). Assessing negative response bias using self-report measures: New articles, new issues. *Psychological Injury and Law*, *15*(1), 1–21. https://doi.org/10.1007/s12207-022-09444-2

Green, P., Allen, L. M., & Astner, K. (1996). *The word memory test: A user's guide to the oral and computer-administered forms, US version 1.1*. CogniSyst.

Holcomb, M., Pyne, S., Cutler, L., Oikle, D. A., & Erdodi, L. A. (2022). Take their word for it: The inventory of problems provides valuable information on both symptom and performance validity. *Journal of Personality Assessment*, 1–11. Epub ahead of Print. https://doi.org/10.1080/00223891.2022.2114358

Ilgunaite, G., Giromini, L., Bosi, J., Viglione, D. J., & Zennaro, A. (2022). A clinical comparison simulation study using the Inventory of Problems-29 (IOP-29) with the Center for Epidemiologic Studies Depression Scale (CES-D) in Lithuania. *Applied Neuropsychology Adult*, *29*(2), 155–162. https://doi.org/10.1080/23279095.2020.1725518

Larrabee, G. J. (2012). Performance validity and symptom validity in neuropsychological assessment. *Journal of the International Neuropsychological Society*, *18*(4), 625–630. https://doi.org/10.1017/S1355617712000240

Merten, T., Thies, E., Schneider, K., & Stevens, A. (2009). Symptom validity testing in claimants with alleged posttraumatic stress disorder: Comparing the Morel Emotional Numbering Test, the Structured Inventory of Malingered Symptomatology, and the Word Memory Test. *Psychological Injury and Law*, *2*(3–4), 284–293. https://doi.org/10.1007/s12207-009-9057-0

Morey, L. C. (1991). *Personality assessment inventory–professional manual*. Psychological Assessment Resources.

Morey, L. C. (2007). *Personality Assessment Inventory (PAI). Professional manual (2nd ed.)*. Psychological Assessment Resources.

Pignolo, C., Giromini, L., Ales, F., & Zennaro, A. Detection of Feigning of Different Symptom Presentations with the PAI and IOP-29. (2021). *Assessment*, *30*(3), 565–579. Advance Online Publication. https://doi.org/10.1177/10731911211061282

Pivovarova, E., Rosenfeld, B., Dole, T., Green, D., & Zapf, P. (2009). Are Measures of Cognitive Effort and Motivation Useful in Differentiating Feigned from Genuine Psychiatric Symptoms? *International Journal of Forensic Mental Health*, *8*(4), 271–278. https://doi.org/10.1080/14999011003635514

Resnick, P. J., West, S., & Wooley, C. N. (2018). The malingering of posttraumatic disorders. In R. Rogers & S. D. Bender (Eds.), *Clinical assessment of malingering and deception* (pp. 188–211). Guilford Press.

Rogers, R., & Bender, D. (2018). *Clinical assessment of malingering and deception*. Guilford Press.

Rogers, R., Sewell, K. W., Martin, M. A., & Vitacco, M. J. (2003). Detection of feigned mental disorders: A meta-analysis of the MMPI-2 and malingering. *Assessment*, *10*(2), 160–177. https://doi.org/10.1177/1073191103010002007

Roma, P., Giromini, L., Burla, F., Ferracuti, S., Viglione, D. J., & Mazza, C. (2019). Ecological validity of the Inventory of Problems-29 (IOP-29): An Italian study of court-ordered, psychological injury evaluations using the Structured Inventory of Malingered Symptomatology (SIMS) as criterion variable. *Psychological Injury and Law*, *13*(1), 57–65. https://doi.org/10.1007/s12207-019-09368-4

Sabelli, A. G., Messa, I., Giromini, L., Lichtenstein, J. D., May, N., & Erdodi, L. A. (2021). Symptom versus performance validity in patients with mild TBI: Independent sources of non-credible responding. *Psychological Injury and Law*, *14*(1), 17–36. https://doi.org/10.1007/s12207-021-09400-6

Shura, R. D., Ord, A. S., & Worthen, M. D. Structured Inventory of Malingered Symptomatology: A Psychometric Review. (2021). *Psychological Injury and Law*, *15*(1), 64–78. *Advance online publication*. https://doi.org/10.1007/s12207-021-09432-y

Smith, G. P., & Burger, G. K. (1997). Detection of malingering: Validation of the Structured Inventory of Malingered Symptomatology (SIMS). *Journal of the American Academy on Psychiatry and Law*, *25*(2), 180–183.

Šömen, M. M., Lesjak, S., Majaron, T., Lavopa, L., Giromini, L., Viglione, D., & Podlesek, A. (2021). Using the Inventory of Problems-29 (IOP-29) with the Inventory of Problems Memory (IOP-M) in malingering-related assessments: A study with a Slovenian sample of experimental feigners. *Psychological Injury and Law*, *14*(2), 104–113. https://doi.org/10.1007/s12207-021-09412-2

Vermetten, E., Baker, D. G., Jetly, R., & McFarlane, A. C. (2016). Concerns over divergent approaches in the diagnostics of posttraumatic stress disorder. *Psychiatric Annals*, *46*(9), 498–509. https://doi.org/10.3928/00485713-20160728-02

Viglione, D. J., & Giromini, L. (2020). *Inventory of Problems–29: Professional Manual*. IOP-Test.

Viglione, D. J., Giromini, L., & Landis, P. (2017). The Development of the Inventory of Problems-29: A Brief Self-Administered Measure for Discriminating Bona Fide from Feigned Psychiatric and Cognitive Complaints. *Journal of Personality Assessment*, *99*(5), 534–544. https://doi.org/10.1080/00223891.2016.1233882

Weathers, F. W., Litz, B. T., Keane, T. M., Palmieri, P. A., Marx, B. P., & Schnurr, P. P. (2013). The PTSD Checklist for DSM–5 (PCL-5). Retrieved from http://www.ptsd.va.gov/professional/assessment/adult-sr/ptsd-checklist.asp

Winters, C. L., Giromini, L., Crawford, T. J., Ales, F., Viglione, D. J., & Warmelink, L. An Inventory of Problems–29 (IOP–29) study investigating feigned schizophrenia and random responding in a British community sample. (2020). *Psychiatry, Psychology and Law*, *28*(2), 235–254. Epub ahead of print. https://doi.org/10.1080/13218719.2020.1767720

Wisdom, N., Callahan, J., & Shaw, T. (2010). Diagnostic utility of the structured inventory of malingered symptomatology to detect malingering in a forensic sample. *Archives of Clinical Neuropsychology*, *25*(2), 118–125. https://doi.org/10.1093/arclin/acp110

Wisdom, N. M., Pastorek, N. J., Miller, B. I., Booth, J. E., Romesser, J. M., Linck, J. F., & Sim, A. H. (2014). PTSD and cognitive functioning: Importance of including performance validity testing. *The Clinical Neuropsychologist*, *28*(1), 128–145. https://doi.org/10.1080/13854046.2013.863977

Young, G. (2016). PTSD in Court I: Introducing PTSD for Court. *International Journal of Law and Psychiatry*, *49*, 238–258. https://doi.org/10.1016/j.ijlp.2016.10.012

Young, G. (2017a). PTSD in Court II: Risk factors, endophenotypes, and biological underpinnings. *International Journal of Law and Psychiatry*, *51*, 1–21. https://doi.org/10.1016/j.ijlp.2017.02.002

Young, G. (2017b). PTSD in Court III: Malingering, assessment, and the law. *International Journal of Law and Psychiatry*, *52*, 81–102. https://doi.org/10.1016/j.ijlp.2017.03.001

# Appendix

## Appendix A. Instructions given to the PTSD Feigning group

We now ask you to **pretend that you are suffering from post-traumatic stress disorder**.

More specifically, you will be asked to take some tests that are typically used to assess some of the changes that people go through when they have experienced a very stressful event. When answering, try to imagine that you were the victim of a flood in which your house collapsed and have been living in a state of anxiety and stress ever since. Imagine that you have applied to the government for financial compensation for people who have developed a mental disorder called "post-traumatic stress disorder" (see below) after having been exposed to a very stressful event.

Then try to answer the questions in the way you imagine a person who is truly traumatized and wants to convince the examiner of the veracity of their suffering and symptoms might do in order to receive financial compensation. Remain in this role for the duration of the tests.

In order for you to simulate in a credible manner, try to imagine that you have experienced the following situation: "Imagine that you live in a city that has been hit by a flood and that you have had great economic difficulties. In the wake of the economic crisis, you were unfairly fired from the company where you worked for a long time and were forced to take a job with a cleaning company. To make matters worse, you have just been divorced and now have to support your children, who are still minors. One day, you learn that an acquaintance of yours is receiving financial assistance from the government to help him cope with the psychological stress of the recent flooding. Therefore, you think that you too could apply for the same benefit to help pay for yourself and, more importantly, your children's studies. However, keep in mind that this benefit is granted by the government only to people who suffer from a mental disorder called "post-traumatic stress disorder," or PTSD.

We now invite you to study the list of symptoms of PTSD reported below and consider how best to convince the examiner that you are suffering from post-traumatic stress disorder:

(1) Having stressful, unwanted, repetitive memories related to the event;
(2) Having lost interest in activities you used to do; difficulty experiencing positive emotions;
(3) Actively avoiding event-related thoughts and feelings and considering event-related places, activities, and situations dangerous;
(4) Viewing self and others negatively (e.g., "I can't trust others," "I'm fragile"); social isolation, feeling like you can't count on anyone;
(5) Having memory lapses related to the stressful event;
(6) Having nightmares related to the event; difficulty falling asleep or disturbed sleep;
(7) Being emotionally upset in thinking back to the event; having felt that the event was happening again;
(8) Experiencing feelings of guilt or blaming others for the event or what happened afterward; having frequent feelings of fear, anger, or terror; feeling irritable and/or aggressive;
(9) Recklessness (e.g., taking substances, driving recklessly, having unprotected sex);

(10) Being on constant alarm (e.g., looking around, being alert to those around you, etc. . .) and easily startled by anything; physical hyper-reactivity when thinking about the event (e.g., palpitations, cold sweat, etc. . .);
(11) Difficulty focusing and doing everyday things (work, study, friends, family) because of the problems described above.

However, be careful not to "overdo" it, otherwise you might not seem credible and the examiner might realize that you are not really suffering from post-traumatic stress disorder, but only simulating it.

If you can show test results similar to those of a person suffering from post-traumatic stress disorder and the test does not recognize you as a "feigner," you will qualify for a prize draw of €20 (e.g. prepaid phone card, Amazon gift card, etc.). The two best feigners will be awarded after the results of this study have been evaluated.