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CLINICAL RESEARCH ARTICLE



Posttraumatic stress moderates return intentions: a factorial survey experiment with internally displaced persons in Nigeria

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ABSTRACT

Background: Persons displaced by conflict often consider returning to their area of origin. Lack of reliable information about conditions in the area of origin makes this decision more difficult. Displaced persons address this by seeking information from other sources, but must then assess the credibility of these sources.

Objective: This study examines the role of symptoms of posttraumatic stress as a moderator of how information from a trustworthy source influences return intentions among displaced persons.

Method: We test our hypotheses with a factorial survey experiment, drawing participants ($N = 822$) from residents of internally displaced person (IDP) camps in northeastern Nigeria.

Results: Information from a more trustworthy source led to increased return intentions. However, the more participants reported symptoms of posttraumatic stress, the smaller the effect source trustworthiness had on their return intentions.

Conclusions: Findings highlight how traumatic experiences during wartime can undermine the effectiveness of the provision of information from a trustworthy source about good conditions in displaced persons' areas of origin, and suggest that interventions addressing posttraumatic stress could have downstream effects on safe, durable, and dignified return.

El estrés postraumático modera las intenciones de retorno: un experimento de encuesta factorial con personas desplazadas internamente en Nigeria

Antecedentes: Las personas desplazadas por un conflicto a menudo consideran regresar a su zona de origen. La falta de información confiable sobre las condiciones en el área de origen dificulta esta decisión. Las personas desplazadas abordan este problema buscando información de otras fuentes, pero luego deben evaluar la credibilidad de estas fuentes.

Objetivo: Este estudio examina el papel de los síntomas del estrés postraumático como moderador sobre cómo la información de una fuente confiable influye en las intenciones de retorno entre las personas desplazadas.

Método: Probamos nuestras hipótesis con un experimento de encuesta factorial, seleccionando participantes ($N = 822$) de residentes de campamentos de desplazados internos (IDP) en el noreste de Nigeria.

Resultados: La información de una fuente más confiable generó mayores intenciones de retorno. Sin embargo, cuanto más participantes informaron síntomas de estrés postraumático, menor fue el efecto que tuvo la confiabilidad de la fuente en sus intenciones de regreso.

Conclusiones: Los hallazgos resaltan cómo las experiencias traumáticas durante tiempos de guerra pueden socavar la eficacia de la provisión de información de una fuente confiable sobre las buenas condiciones en las áreas de origen de las personas desplazadas, y sugieren que las intervenciones que abordan el estrés postraumático podrían tener efectos posteriores en la seguridad, durabilidad y un retorno digno.

创伤后应激调节返回意愿：对尼日利亚境内流离失所者进行的析因调查实验

背景：因冲突而流离失所的人经常考虑返回原籍地区。缺乏原籍地区的可靠信息使得这一决定更加困难。流离失所者通过从其他来源寻求信息来解决这个问题，但随后必须评估这些来源的可信度。

目的：本研究探讨了创伤后应激症状作为来自可靠来源的信息如何影响流离失所者返回意图的调节因素的作用。

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traumático'; información;
Nigeria


关键词

流离失所; '创伤后应激'; 信
息; 尼日利亚

HIGHLIGHTS

- Examines the impact of posttraumatic stress on the decision-making process of internally displaced persons in Nigeria.
- Credible information from trustworthy sources can positively influence return intentions, but this effect is diminished by symptoms of posttraumatic stress.
- Highlights the importance of addressing both information needs and mental health concerns to support displaced persons in making informed decisions about their future.

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方法：我们通过析因调查实验检验我们的假设，从尼日利亚东北部境内流离失所者 (IDP) 营地的居民中抽取参与者 ($N = 822$)。

结果：来自更可靠来源的信息导致返回意愿增加。然而，报告创伤后应激症状的参与者越多，来源可信度对其返回意图的影响就越小。

结论：调查结果强调了战时的创伤性经历可能会削弱从可靠来源提供流离失所者原籍地良好环境信息的有效性，并表明致力于创伤后应激的干预措施可能会对安全、持久和有尊严的返回产生下游影响。

1. Introduction

When and why do people displaced by violent conflict decide to return to their area of origin? Armed conflicts have generated large displacement crises with adverse consequences for communal stability, resiliency, and well-being in both areas of displacement and origin (Zhou & Shaver, 2021). To reverse these consequences, peacebuilding and development experts advocate for safe, voluntary, and dignified return (Gottwald, 2012). Despite concerted efforts by governments, donors, and international organizations to promote return, the overall return rate needed for a durable post-conflict recovery remains very low (Ghosn et al., 2021).

Most research to date on conditions influencing voluntary return draws on the push-pull framework used to explain migration more generally (Lee, 1966). Push/pull factors are conditions in the area of displacement/origin, including past victimization, social networks, economic opportunities and access to public goods, and security. The push-pull framework holds that displaced persons maximize their well-being and minimize risk by choosing to return when the conditions in their area of origin that are relevant to them improve or appear better than their current place of displacement (Koser, 1997). But incomplete information is a powerful barrier to accurately comparing conditions in areas of displacement and origin. While displaced persons have first-hand knowledge of conditions in their area of displacement, their knowledge of conditions at home are often fragmentary or incomplete. To address this information deficit, displaced persons rely on information sources such as government officials, the media, friends and family in their area of origin, and others who are displaced. This promises to provide the displaced with information about conditions in their area of origin that can improve their decision-making. Recognizing this need, international organizations and other actors seeking to facilitate voluntary return regularly collect information in areas of origin and disseminate this to displaced persons.

While relying on others for information can address displaced persons' information deficits, it raises another problem – they must carefully evaluate the ability and incentives of the source to provide

accurate information. Displaced people, for example, often find it difficult to visit their homes to collect first-hand information. In their study of Syrian refugees in Lebanon, Alrababa'h et al. (2020) found that pull factors' effects were moderated by how much confidence the potential returnee had in the value of the information provided about these conditions. In other words, displaced persons considered return more seriously if they had more confidence in the source providing information about their area of origin.

Lupia et al. (1998) hold that a source influences a target's decisions when it is both knowledgeable – that is, well-positioned to predict the consequences of actions taken by the target – and trustworthy – that is, has self-interested reasons to convey true rather than deceptive knowledge to the target. Subsequent research in multiple disciplines has found that trustworthiness is more important than knowledge (Chiang & Knight, 2011; Pluviano et al., 2020; Weitz-Shapiro & Winters, 2017).

Prior work in psychology (Pluviano et al., 2020), economics (Chiang & Knight, 2011) and political science (Lupia et al., 1998; Weitz-Shapiro & Winters, 2017) conclude that trustworthy sources of information influence choices and decisions. These works have not considered how psychological distress moderates this relationship. We contribute to a growing body of research on the moderating effects of psychosocial health on individual behaviour, attitudes, and choices (e.g. Canevello et al., 2021; Landwehr & Ojeda, 2021). Our central contribution builds on recent research on the role that psychological processes play in moderating the relationship between push-pull factors and return migration (Ghosn et al., 2021). We theorize that psychological distress in the form of symptoms of posttraumatic stress disorder (PTSD) among displaced persons undermines their ability to carefully process information regarding a source and thus influences the degree to which even a trustworthy source can influence a target.

Central symptoms of PTSD heighten mistrust in others. The first is alterations in cognition. A common alteration is persistent negative beliefs about the self and the world. Those suffering from PTSD commonly conclude that the world is unfair or unjust (Park et al., 2012). The second is hypervigilance, understood as an

exaggerated sensitivity to potential threats and a strong focus on the potential for danger in social interactions (Yehuda et al., 2015). Hypervigilance resulting from PTSD has important consequences for social cognition in general and the ability to trust others specifically. Hypervigilance increases generalized perceptions of threat (Canetti et al., 2013) and leaves a neural footprint in the form of exaggerated responses to threatening stimuli among traumatized individuals (Rauch et al., 2000). Both symptoms make people sensitive to information related to their experience of traumatic events. In the context of displaced people, those with symptoms of PTSD should be highly attuned to information that reminds them of their area of origin. Hypervigilance, in turn, leads individuals to be more suspicious and less trustworthy of others. Consistent with these two mechanisms, we know that individuals with PTSD symptoms make lower investments in trust games with cooperative partners (Bell et al., 2019). They also learn more slowly during trust games, indicating an impaired ability to process relevant information about the intentions of others (Cisler et al., 2015). Other evidence suggests that individuals with PTSD symptoms are more likely to attribute hostile intent to others (van Reemst et al., 2016) and to interpret ambiguous situations as more threatening (Bomyea et al., 2017), and that individuals who experience trauma are less trusting of others (Potts et al., 2019). Based on this logic, we develop the following hypothesis:

Information about improved conditions in a displaced person's area of origin from a trustworthy source increases return intentions more among displaced with fewer PTSD symptoms than among those with more PTSD symptoms.

We tested this hypothesis with a factorial survey experiment, drawing participants from residents of internally displaced person (IDP) camps in north-eastern Nigeria. These residents were displaced from their homes by the conflict between the government, militia, and Boko Haram rebel forces. At the time we fielded the experiment, the number of violent confrontations between armed groups had declined and the return of displaced persons had begun to increase. This means that return was a plausible outcome for many of our participants (Kwenin, 2016).

2. Method

2.1. Setting

We conducted fieldwork in Borno in Nigeria, the epicentre of the Boko Haram Islamist insurgency. Boko Haram conducted violent attacks on religious, political, and security targets, and killed, imprisoned, and displaced civilians. In response, Nigerian and allied

forces launched a counter-offensive that created casualties among both the civilian population and members of Boko Haram. Many residents fled rural areas for safety. The conflict resulted in over 2 million IDPs (UNHCR, 2016), widespread violence against civilians, and a heavy mental health and psychosocial burden (Kaiser et al., 2020).

2.2. Procedure and sample

We surveyed 822 adults aged 18 and above who identified as IDPs and resided in IDP camps in Borno State between 19 January and 1 February 2021 (see SI Section 1 for details). Participants were recruited from 10 randomly chosen camps safe at the time of the study. Most of the camps meeting the inclusion criteria were in Maiduguri and Jere Local Government Areas (LGAs). The camps varied in size, residents' areas of origin, and their status as either government-approved formal camps or informal IDP settlements. The sample size was determined by logistical and practical constraints, similar to other research in locations that have experienced conflict (Mironova & Whitt, 2018) or involve displaced persons (Ghosn et al., 2021).

Enumerators randomly selected a starting point in each IDP camp and recruited participants from every third household. They prioritized interviewing the self-identified head of the household, or the oldest available adult if the head was unavailable. If no suitable adults were found, they moved to the next third household. Participants were informed about the study's purpose, confidentiality, and their rights, including the ability to withdraw at any time. Those who agreed received a translated consent form. There was no time limit, and the average completion time was 25 minutes. Participants were not compensated. The completion rate was 97%.

Enumerators were local residents fluent in English and Hausa, familiar with local customs, and experienced in similar research. They received about 20 hours of training in research ethics and fieldwork, and worked in teams with at least one male and one female enumerator. Interviews were conducted privately in participants' homes using tablet computers using software that randomized treatment assignment.

The risk of distress from completing the survey was considered low based on input from camp and community leaders, focus groups, and pre-testing, aligning with previous findings (Jaffe et al., 2015). Participants were given the research team's contact information and encouraged to seek counselling or other support if they experienced distress. No participants reported such distress. Approval was obtained from the

National Health Research Ethics Committee (NHREC) of Nigeria and a US institutional review board (University of North Carolina at Charlotte). COVID-19 safety measures were implemented, and permissions were granted by IDP camp, community, and local government leaders.

2.3. Research ethics

We were cognizant of potential power differentials between the research team and participants in the study. We sought to minimize the perception of any such power differentials. This motivated our decision not to incentivize participation in the study. During our focus groups, camp leaders and residents indicated that financial incentives might lead participants to infer that the research team preferred a particular answer choices. We also were concerned that incentives might motivate participation by individuals who would otherwise prefer to withdraw from the study. We informed participants about the nature of our research, our identities, and sponsors. The consent form stated that participants could refuse to answer questions and could stop participating at any time and was available either orally or in written form in either Hausa or English. The research did not involve covert practices or deception. We did not collect identifying information.

We focused on minimizing the possibility of harm, traumatization, or re-traumatization, while acknowledging that no study is without risk. Participants were informed about the survey topics during the consent process. The survey included self-reports on violence exposure and PTSD symptoms. Input from camp and community leaders, as well as our focus groups and pre-testing, sources indicated a low risk of causing distress to participants. This is consistent with the findings of a meta-analysis of participant responses to trauma research (Jaffe et al., 2015).

2.4. Experimental design

Our experiment manipulated the trustworthiness and knowledge of an information source, using a hypothetical NGO. In focus group discussions, IDPs indicated they gathered information from multiple sources, including family, friends, NGO staff, security personnel, and the Hausa version of the BBC. Camp leaders were distrusted, while information from family and friends was viewed as inconsistent and unverifiable.

Focus group participants viewed NGOs providing assistance to IDPs positively and as a valuable source of information. Some NGOs have worked with them for years, while others are new. Some participants believed that some NGOs were motivated more by protecting their operations and finances than by

helping IDPs, consistent with reports of government pressure on NGOs in Borno state (Wintour, 2019).

The final survey instrument (SI Section 2) drew on these insights. It included a 2×2 factorial survey experiment that manipulates the trustworthiness and knowledge of a fictional NGO – Action Against Violence (AAV) – providing information to IDPs about conditions in their areas of origin. Participants were randomly assigned to one of four vignettes. The experiment manipulates the degree to which an information source is knowledgeable and trustworthy. The nuanced attitudes towards NGOs among the focus group participants provided an opportunity to realistically manipulate these two dimensions. Specifically, focus group participants indicated that NGOs varied in their knowledge of the conflict which, building on some of their specific comments, we proxied with the location of the NGO staff (local or distant) and the length of time the staff had worked with local conflict-affected communities.¹ For the conditions in which AAV was less knowledgeable, the vignette began with ‘Action Against Violence (AAV) is a registered NGO with an office in Lagos. They recently started operations in Borno and their staff occasionally visit displaced communities in Maiduguri from Lagos.’ For the conditions in which AAV is more knowledgeable, the vignette begins with ‘Action Against Violence (AAV) is a registered NGO with an office in Maiduguri. For many years, their staff has lived in and worked with communities experiencing violence in Borno state.’ The motivation for this is that an NGO with a long presence in the area from which IDPs displaced would be perceived as having access to more and better information about local conditions.

Focus group participants thought that most NGOs were motivated primarily to help IDPs, but also indicated some wariness towards NGOs that they suspected might alter their operations for financial or political reasons. This allowed us to manipulate the trustworthiness of the fictional NGO by varying the degree to which the NGO is believed to be motivated by financial concerns or the interests of IDPs. For the less trustworthy treatment conditions, AAV was described in the following terms:

When talking about this organization, some formerly displaced persons have said that the NGO is always short of funds, and for this reason encourages displaced persons to return home even when they believe that the condition might not be suitable for people to return.

In the more trustworthy conditions, the experiment stated that ‘When talking about this organization, some formerly displaced persons have said that the NGO encourages displaced persons to return home only when they believe that the condition at home is suitable for people to return.’ The inclusion of ‘only’ is an important modifier, as it indicates that the

NGO would provide information suggesting that return is safe and viable when this is actually the case. Focus group participants also indicated they rarely had first-hand information about the true knowledge and motives of NGOs. In our treatments, we mimic this by suggesting that the information they receive about the NGO comes from formerly displaced people who interacted directly with the organization, and thus would have first-hand experience with the NGO's knowledge and trustworthiness.

2.5. Measures

Participants first were asked about their exposure to violent conflict. They were asked if they experienced violence committed by armed extremist groups such as Boko Haram, the Nigerian army, or pro-government militias. We measured exposure to five different types of violence: death of family member, physical injury of family member, physical injury of the participant, home destroyed or severely damaged, and forcible displacement by a combatant. The five dichotomous measures were summed to create the variable *exposure to violence*, an approach used in similar studies (Voors et al., 2012).

We next measured participants' symptoms of post-traumatic stress using the six-item abbreviated PTSD Checklist-civilian version PCL-C (Lang & Stein, 2005; Weathers et al., 1993). The PCL-C is a self-report scale that screens for probable PTSD, and the six-item version has been shown to have adequate psychometric properties for the same screening purposes (Lang et al., 2012). Participants were asked to rate how much each symptom bothered them during the past month on a 5-point scale ranging from 1 (not at all) to 5 (extremely). These values were then summed to create the variable posttraumatic stress (*PTS*). Prior work found that, among IDPs, the PCL-C has high internal consistency (Ibrahim et al., 2018; Pfeiffer & Elbert, 2011; Thapa & Hauff, 2005). This was the case in our sample ($\alpha = .84$).

After being presented with one of these four treatment conditions, participants were then asked

Imagine that the staff of this NGO tells a displaced person like you that the security and general condition in your area of origin have improved in recent months, and that this improvement is expected to be sustained into the future. How likely do you think that someone like you may consider returning to your place of origin based on the information from this NGO staff?

Answers to this question serve as our outcome variable, *return intentions*, that takes the values 1 (very unlikely), 2 (unlikely), 3 (neutral), 4 (likely) and 5 (very likely). This question asks the participant to assume the position of a displaced person 'like you,' rather than to indicate their return intentions, to

avoid the possibility that the treatments might not correspond with the participant's lived experience.

The survey collects information on participants' age, gender, education, and socioeconomic status. Age is measured on a scale of 1–7, measuring ages of 18–24, 25–34, 35–44, 45–54, 55–64, 65–74, 75–84, or 85 or older. We decided to measure age with these categories, rather than a specific number of years, since some participants may not have known their exact year of birth. Gender is coded as 1 for males and 2 for females. Education is an ordinal measure with values of no formal education, informal schooling, some or completed primary, secondary, or university education, or post-graduate education. Socioeconomic status is measured on a scale from 0 to 10, representing the worst-off to best-off positions in Nigerian society. Participants rated their socioeconomic status before the conflict with Boko Haram and at the time of the survey on a modified version of the Cantril scale (Cantril, 1965), which has been shown to correlate with income (Deaton, 2008). The variable *SES Change* captures the difference between these two ratings, indicating changes in participants' perceived socioeconomic status during the conflict.

2.6. Data analysis

We began by investigating if covariates were balanced across the four treatment conditions by calculating the F-statistics and associated *p*-values for the variables *PTS*, *exposure to violence*, *age*, *gender*, *education*, and *SES change*.

We then assessed our hypothesis with four ordinary least squares (OLS) regression models. Each model used *Return Intentions* as the outcome variable. All models employed camp fixed effects. The first three sought to determine if more trustworthy sources of information were associated with higher return intentions. Based on prior research we expected to find that this is the case. Model 1 included only treatment assignment as a factor variable, treating the condition Less Knowledgeable and Less Trustworthy as the excluded factor. Prior research led us to expect that the coefficient for the factors More Knowledgeable and More Trustworthy and for Less Knowledgeable and More Trustworthy would be positive and statistically significant. Models 2 and 3 probed the robustness of these relationships. Model 2 added the variable *PTS*, and Model 3 added *PTS* and the remaining covariates.

The main test of our hypothesis is reported in Model 4. This model differed from Model 3 in one respect – it interacted the treatment assignment categorical variable with the continuous *PTS* variable. Our hypothesis led us to expect that the coefficients for the interaction terms between *PTS* and the treatment values More Knowledgeable and More

Table 1. Descriptive statistics.

Descriptive statistics for entire sample					
	Observations	Mean	Standard deviation	Minimum	Maximum
Return intentions	822	3.43	1.59	1	5
Posttraumatic stress	822	18.33	6.22	6	30
Exposure to violence	822	3.61	1.03	1	5
Age	822	3.19	1.32	1	7
Gender	822	1.49	0.5	1	2
Education	822	2.9	1.65	1	10
SES Change	822	−2.22	4.72	−10	8
Descriptive statistics for more knowledgeable and more trustworthy condition					
	Observations	Mean	Standard deviation	Minimum	Maximum
Return intentions	215	3.91	1.35	1	5
Posttraumatic stress	215	18.63	6.33	6	30
Exposure to violence	215	3.65	.99	1	5
Age	215	3.10	1.26	1	7
Gender	215	1.49	.50	1	2
Education	215	2.71	1.56	1	8
SES Change	215	−2.16	4.70	−10	8
Descriptive statistics for more knowledgeable and less trustworthy condition					
	Observations	Mean	Standard Deviation	Minimum	Maximum
Return intentions	211	3.00	1.69	1	5
Posttraumatic stress	211	18.11	6.27	6	30
Exposure to violence	211	3.57	1.06	1	5
Age	211	3.34	1.40	1	7
Gender	211	1.47	.50	1	2
Education	211	2.97	1.75	1	10
SES Change	211	−2.26	4.61	−10	7
Descriptive statistics for less knowledgeable and more trustworthy condition					
	Observations	Mean	Standard deviation	Minimum	Maximum
Return intentions	195	3.84	1.41	1	5
Posttraumatic stress	195	18.22	6.37	6	30
Exposure to violence	195	3.54	1.07	1	5
Age	195	3.16	1.36	1	7
Gender	195	1.50	.50	1	2
Education	195	2.91	1.63	1	8
SES Change	195	−2.18	4.85	−9	8
Descriptive statistics for less knowledgeable and less trustworthy condition					
	Observations	Mean	Standard deviation	Minimum	Maximum
Return intentions	201	2.96	1.65	1	5
Posttraumatic stress	201	18.36	5.94	7	30
Exposure to violence	201	3.69	.99	1	5
Age	201	3.18	1.27	1	7
Gender	201	1.48	.50	1	2
Education	201	3.00	1.66	1	7
SES change	201	−2.27	4.74	−9	8

Trustworthy and for Less Knowledgeable and More Trustworthy would be negative and statistically significant, indicating that the positive effect of a trustworthy source on return intentions declines as *PTS* increases. We estimated the effect size by calculating the conditional marginal effects of the values of the treatment variable factors at specific values of *PTS*. These marginal effects represented the average change in the outcome associated with a unit change in the treatment variable, holding covariates at their means.

Models 1–4 rely on OLS regression to simplify interpretation and presentation of the results. OLS assumes that the relationship is linear and additive, which may not be the case with an ordered response variable. In such cases ordered logistic regression is a more appropriate model; we report results from ordered logistic models in SI Section 4.

3. Results

Descriptive statistics are provided in Table 1; visualizations of the outcome and *PTS* are presented in SI Section 3. In the entire sample, over 58% of participants indicated that, if in the position of a displaced person like themselves, they would be likely or very likely to return, while 32% stated they would be very unlikely or unlikely to return. Most subjects reported values on the measure of *PTS* between 10 and 20, indicating a moderate to high level of probable PTSD, and almost 8% reported the highest possible level of probable PTSD. Over 75% of the participants reported a score of 14 or higher, meaning they have screened positive for probable PTSD using this measure.

Table 2 shows the results of an F-test of the balance of covariates across treatment groups. For each covariate, we estimated a regression model of the covariate

Table 2. Balance tests.

Covariate	F-statistic	Degrees of freedom	p-value
Posttraumatic stress	0.14	821	.71
Exposure to violence	0.03	821	.86
Age	0.03	821	.86
Gender	0.01	821	.95
Education	2.62	821	.11
SES change	0.03	821	.87

on the treatment variable and tested if the coefficient of the treatment variable was significantly different from zero. The results indicate that the covariates are well-balanced across treatment groups, as the *p*-values for all three *F*-tests are not significant.

Table 3 reports the results of the four OLS models. In models 1–3, the two treatment conditions that have a trustworthy source had positive and statistically significant relationships with return intentions. This means that, compared with the excluded category of Less Knowledgeable and Less Trustworthy, receiving a treatment with positive information about conditions in an area of origin from a trustworthy source led to stronger intentions to return. The coefficients on the two trustworthy treatment conditions are similar in size, indicating that an information source that is both more trustworthy *and* more knowledgeable did not further increase return intentions compared to a source that is more trustworthy but less knowledgeable. In other words, being more trustworthy alone is sufficient to increase return intentions.

Our hypothesis concerns how higher levels of PTS moderate the effects of trustworthiness cues. Model

4 assesses this proposition by interacting each treatment condition with *PTS*. The interaction terms are significant and negative, indicating that higher levels of *PTS* reduce the effect of a more trustworthy source of information on return intentions.

Table 4 presents estimates the effect size in the form of the conditional marginal effects of the values of the treatment variable factors at specific values of *PTS*. For the two treatment conditions in which the source is trustworthy, the marginal difference when the participant has low levels of *PTS* was positive, substantive, and statistically significant. These marginal differences decrease in value as the value of *PTS* increases. Consider, for example, the marginal differences for the More Knowledgeable and More Trustworthy condition. The model estimates that a participant reporting low levels of *PTS* – i.e. when the value of *PTS* equals 5 – has a value of return intentions that is 2.13 points larger than a respondent with the same value of *PTS* assigned to the baseline condition (Less Knowledgeable and Less Trustworthy). This is a large difference, as return intentions is measured on a 5-point scale. As *PTS* increases, the corresponding marginal difference declines substantially, and is not statistically distinguishable from a respondent in the baseline condition when *PTS* reaches its maximum value of 30.

SI Section 4 reports the results of ordered logistic regression models that are substantively similar to the OLS models reported here.

Table 3. Ordinary least squares regression (camp fixed effects).

	(1)	(2)	(3)	(4)
More knowledgeable and more trustworthy	.96*** (.15)	.96*** (.15)	.96*** (.15)	2.57*** (.46)
More knowledgeable and less trustworthy	.03 (.15)	.04 (.15)	.07 (.15)	.39 (.46)
Less knowledgeable and more trustworthy	.89*** (.15)	.90*** (.15)	.91*** (.15)	1.91** (.46)
Posttraumatic stress (PTS)		.02** (.01)	.01 (.01)	.05*** (.02)
Exposure to violence			.18** (.05)	.18** (.05)
Age			-.02 (.04)	-.03 (.04)
Gender			.01 (.11)	-.01 (.11)
Education			.08*** (.03)	.08*** (.03)
SES change			.07*** (.01)	.07*** (.01)
More knowledgeable and more trustworthy*PTS				-.09*** (.02)
More knowledgeable and less trustworthy*PTS				-.02 (.02)
Less knowledgeable and more trustworthy*PTS				-.05** (.02)
Constant	2.95*** (.11)	2.61*** (.19)	2.04*** (.35)	1.37*** (.45)
Observations	822	822	822	822
R-squared	.09	.10	.14	.16

Note: Standard errors are in parentheses. Excluded category for treatment is the less knowledgeable and less trustworthy condition. *** $p < .01$, ** $p < .05$,

* $p < .1$.

Table 4. Conditional marginal effects.

	PTS	dy/dx	SE	t	p > t
More knowledgeable and more trustworthy	5	2.13	0.27	7.85	.00
	10	1.70	0.21	8.18	.00
	15	1.27	0.16	7.94	.00
	20	0.83	0.14	5.80	.00
	25	0.40	0.17	2.35	.04
	30	-0.04	0.22	-0.16	.88
More knowledgeable and less trustworthy	5	0.31	0.41	0.77	.46
	10	0.22	0.26	0.84	.42
	15	0.14	0.14	0.97	.36
	20	0.05	0.11	0.43	.68
	25	-0.04	0.22	-0.17	.87
	30	-0.12	0.36	-0.34	.74
More knowledgeable and less trustworthy	5	1.63	0.46	3.55	.01
	10	1.36	0.33	4.11	.00
	15	1.09	0.21	5.08	.00
	20	0.82	0.14	5.65	.00
	25	0.55	0.19	2.94	.02
	30	0.27	0.29	0.93	.38

Note: The dy/dx column is the estimate for how *return intentions* differs for each of the three conditions compared to the baseline condition of less knowledgeable and less trustworthy for values of *PTS* ranging from the minimum to the maximum level of this variable in increments of five units.

4. Discussion

4.1. Main findings

The study makes two central contributions. First, prior research established that lack of information about conditions in the area of origin are a powerful barrier to return (Koser, 1997), and that displaced persons are likely to consider return if provided with information from a credible source that conditions were good (Alrababa'h et al., 2020). A different body of research in psychology, economics, and political science (Chiang & Knight, 2011; Lupia et al., 1998; Pluviano et al., 2020; Weitz-Shapiro & Winters, 2017) finds that trustworthiness is the key characteristic of a source that makes it credible to a target. We integrated and extended these distinct literatures on return intentions and on source characteristics by trustworthiness, but not knowledge, increased willingness to consider returning to the area of origin among displaced persons.

Second, the study highlights the role of individual differences in psychological distress, finding that displaced persons with higher levels of posttraumatic stress were less responsive to trustworthy information when deciding to return home. This extends prior work by considering how individual psychological differences, such as exposure to trauma and PTSD symptoms, moderate the effects of trustworthy information sources. The study thus integrates social and psychological factors to better explain choices and behaviour.

Future research can build on this finding. It could explore the generalizability of the findings to displaced persons in other settings, and to other populations with high rates of PTSD, such as veterans, and victims of violent crime and sexual violence. Understanding

how psychological distress may moderate the effects of information from trustworthy sources, such as public health authorities, scientific experts, or political elites, is worth considering.

4.2. Strengths and limitations

The study has a number of strengths. As discussed above, it is interdisciplinary in the sense that it integrates diverse literatures to develop a novel hypothesis about the moderating effect of PTSD symptoms. It assesses this hypothesis with an experiment, allowing for estimation of the causal effects of treatments on outcomes. The study was fielded with close attention to ethical considerations in a challenging environment and surveyed hard-to-reach and vulnerable participants whose decisions to return or remain displaced have important consequences for individual well-being and societal stability.

Here we highlight potential limitations. The first is external validity. The study was conducted in IDP camps in Nigeria. The fact that participants resided in camps, rather than residential communities, could indicate varying exposure to violence and different social networks compared to those in residential areas. These factors may influence willingness to return and trust in NGOs. Return intentions might be influenced by the overall state of the conflict during the survey period, which was characterized by reduced political violence and some return of displaced persons. Collecting data at different points in time, particularly during periods of heightened conflict intensity, could affect willingness to return.

Second, we used a hypothetical NGO and asked participants to estimate the return intentions of displaced persons similar to themselves. This approach was chosen for ethical and design reasons to avoid potentially influencing participants' actual return behaviour and to minimize the impact of their knowledge about conditions in their actual area of origin. These choices mean that actual return intentions could differ from those we document in our experiment.

Third, while we control the characteristics of the source, it would neither be ethical nor practical to manipulate PTSD symptoms. Although the survey had a low refusal rate, it is possible that the distribution of PTSD symptoms in our sample may not accurately represent the broader population of IDP camp residents.

4.3. Implications for practice

The findings have practical implications. Interventions targeting mental health, particularly PTSD, can not only improve personal well-being but also assist traumatized displaced individuals in determining reliable sources of information. While our focus is

on displaced persons, these findings can be applied to understand how source characteristics influence attitudes and behaviours of individuals. Given the higher prevalence of PTSD among vulnerable sub-populations such as military veterans, civilians in combat zones, displaced persons, and women, it is crucial to provide them with accurate information regarding healthcare, legal and social assistance, and rebuilding their lives. Simply providing information may be insufficient for individuals with PTSD; addressing the underlying causes of this disorder is essential for successful outcomes.

How can humanitarian organizations increase trust among recipients? While beyond this paper's scope, prioritizing integrity and accountability towards local communities has been urged (ICRC, 2019). Such principles promise to increase trust in the humanitarian sector. Our experiment found that engaged NGOs (those with local operations) prioritizing community well-being (placing the target's interests over their own financial well-being) have a larger impact on displaced persons' considerations of return.

4.4. Conclusion

This study makes important contributions to research on displacement and return intentions. By examining the role of posttraumatic stress as a moderator of the relationship between source trustworthiness and return intentions, this study provides a more nuanced understanding of the factors that influence decision-making among IDPs. Interventions aimed at supporting safe and sustainable returns for displaced populations should consider both the provision of information from trustworthy sources and targeted support for individuals experiencing posttraumatic stress and potentially other mental health problems. More generally, this study highlights the importance of considering individual differences in psychological distress when seeking to provide information to vulnerable populations.

Note

1. Here we indicate in italics the text that differed across treatments. The text read to participants did not include italics.

Data availability statement

Data and code used to support the findings will be available in the Harvard Database prior to publication.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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