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Social Support, Dysfunctional Coping, and Community Reintegration as Predictors of PTSD Among Human Trafficking Survivors

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ABSTRACT

Human trafficking exerts psychological effects on survivors that persist after intervention, and even after community reintegration. Effects include anxiety, depression, alienation, disorientation, aggression, suicidal ideation, attention deficit, and posttraumatic stress disorder (PTSD). Community supports and coping mechanisms may mitigate these effects. The report presented here is part of a long-term program of research to develop and test evidence-informed mental health and human capacity-building intervention programs for women and girls who are victims of trafficking. Structural equation modeling was used to assess a conditional process model (moderated mediation) of the effect of social support, coping, and community reintegration on PTSD among $n = 144$ girls and women. Participants received psychosocial intervention at a residential care facility for trafficking survivors. Results indicate model fit was excellent. Results indicate community reintegration indirectly influenced PTSD through its effect on perceived social support. Survivors who reported more difficulty reintegrating back into the community perceived less social support than those that reported easier community reintegration, and trafficking survivors who perceived less social support indicated more PTSD. Survivors with more PTSD symptoms tended to report using more dysfunctional coping mechanisms.

KEYWORDS

dysfunctional coping; human trafficking; community reintegration; PTSD; social support

Introduction

Human trafficking is the recruitment, transportation, transfer, harboring, or receipt of persons by improper means (such as force, abduction, fraud, or coercion) for an improper purpose including forced labor or sexual exploitation.[1] Although valid and reliable data on the issue remain a challenge, mainly as trafficking victims are a hidden and hard-to-reach population, it is estimated that 22 million people are currently victims of some form of human trafficking worldwide.[2] About 80% of trafficking victims are estimated to be female and half are children.[3] Trafficking is growing fast in Africa, where it is currently estimated that there are close to 4 million trafficking victims.[2]

The trauma experienced by victims of trafficking includes anxiety, depression, alienation, disorientation, aggression, suicide ideation, attention deficit, and posttraumatic stress disorder (PTSD).[4–6] Trauma worsens during the trafficking process and persists far beyond the end of any exploitation. Recognizing the high prevalence of PTSD among female survivors of human trafficking, the International Organization for Migration includes knowledge of PTSD symptoms and characteristics as a "minimum standard" for all workers in post-trafficking service settings.[7] PTSD symptoms produce a variety of pervasive social, occupational, and functional impairments.[8]

In a sample of women who had been trafficked into sex work or sexually abused while working as domestic laborers, sleep disturbances were the most common PTSD symptom, experienced by 24% of the women, when assessed at 90 or more days after entering post-trafficking services.[9] Trauma-related sleep disturbances are associated with physical health problems, depression, and suicidality in female sexual assault survivors with PTSD.[10,11] In a study investigating self-harm among child and adolescent trafficking survivors, participants with PTSD were more than four times as likely to have engaged in self-harm behavior in the previous month, including self-injury or suicide attempts, than those without PTSD.[12]

A systematic review of the health effects of human trafficking found a pooled PTSD prevalence estimate of 32% across six studies with female survivors.[13] Across

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these studies, PTSD prevalence estimates ranged from 13.4% in a sample of Nepalese survivors of sex and labor trafficking to 77% in a sample of women and adolescent girls who had been trafficked to or within Europe for sexual exploitation.[14,15] The largest cross-national study to date to measure PTSD prevalence among trafficked persons in a post-trafficking setting found that 44% reported symptoms indicative of PTSD.[16]

The heterogeneity of these estimates reflects varying methodologies; studies typically assess PTSD symptom severity or potential PTSD diagnosis with screening scales administered by lay mental health workers in a post-trafficking service setting, although two studies used diagnostic interviews conducted by clinicians.[17,18] Another source of the heterogeneity in estimates of PTSD prevalence is the variation in the composition of the samples. Much of the prior literature has focused on women involved in trafficking for sexual exploitation, as opposed to trafficking for domestic and other forms of labor.[13] It is unclear how these and other characteristics of the samples, as well as receiving or not receiving some form of intervention, are related to the prevalence of PTSD among trafficking survivors.

Further, PTSD may be a result of pre-trafficking, trafficking, or even post-trafficking experiences. The broader literature on PTSD identifies experiencing a previous traumatic or violent event as a risk factor for developing the disorder in response to a subsequent traumatic event.[19,20] For example, among Moldovan female survivors of trafficking, those with a diagnosed mental disorder post trafficking were significantly more likely to have experienced childhood emotional, physical, or sexual abuse than survivors with no diagnosed mental disorder.[17] Survivors who had experienced childhood sexual abuse were approximately five times more likely to have diagnosed mental disorder at 6 months post-return.[17]

Certain living and working conditions during the trafficking experience are related to PTSD diagnosis in the post-trafficking period. Overexposure to rain or sun, overcrowded rooms, inadequate food or drinking water, dangerous sleeping conditions, having no place to sleep or sleeping on the floor, having no clean clothing, and inability to maintain basic hygiene are among these factors.[16] Trafficking survivors who reported one or more of these conditions were three times more likely to have PTSD. Survivors who had experienced restricted freedom, such as being locked in a room or never being free to do what they wanted or go where they wanted, had double the risk of PTSD.[16] Trafficking survivors who experienced excessive working hours or being cheated of promised wages also reported higher PTSD symptom levels.[16,21]

Social support in the post-trafficking period may exert protective effects, thus moderating the relationship between life stress and PTSD. Although lower levels of social support have been associated with a greater likelihood of any diagnosed mental disorder in female survivors of trafficking,[17] no prior study has examined this association for PTSD specifically. A meta-analysis of PTSD risk factors showed that low perceived social support following trauma is an independent predictor of PTSD among survivors of noncombat interpersonal traumas.[20] Another study found a stronger relationship between post-trauma social support and PTSD, with a weighted average r of 0.30 across five studies with civilian samples of mixed traumas.[19] However, the effect size for social support varies according to time since the traumatic event: the effect is strongest when social support is assessed more than three years post-trauma, and the effect is nonexistent when assessed in the first 1 to 6 months post-trauma.[20]

Because of the increased trafficking of girls in Ghana,[22,23] various NGOs are becoming involved in assisting survivors to supplement existing government efforts.[23] *Lifeline*, the partnering agency in this research, is one such program. *Lifeline* is a residential care facility that targets women and girls who are in trafficking conditions within a resource-deprived informal settlement community in a congested urban area in southwestern Accra. The community's population is approximately 40,000 and consists of mostly economic migrants from the northern and rural parts of Ghana.[22,24] The social, economic, and structural conditions in the community increase the risks of exploitation of girls and women. Women are referred to the agency by police, medical personnel, social workers, community members, or *Lifeline* alumni. Some escape into the facility by themselves.

Description of the intervention

The *Lifeline* intervention program is premised on: *Rescue, Rehabilitation, and Reintegration*. The program's goals are to rescue, protect, and reintegrate at-risk and trafficked girls into society and find suitable ways to prevent poverty. The target population of *Lifeline* is primarily female child porters in Accra. The program targets girls and women due to their increased vulnerability to sexual and other forms of exploitation. *Lifeline* serves almost 80 people concurrently. The program provides a variety of services including shelter (dormitory style sleep and bathroom facilities), food, education, social services, child care services, workforce skills training, and spiritual support. The institutional group style living quarters and meal services involve the residents helping to maintain the daily upkeep of their living and working areas.[22,25]

The *Lifeline* personnel include a combination of professional and para-professional staff members with specific training, experience, and expertise in working with trafficking survivors. The agency is administered by a coordinator and deputy coordinators who supervise program operations, six professional social workers, four vocational skill instructors, early childhood development teachers, kitchen attendants, an accountant, a driver, and security personnel.[22,25]

Each participant at *Lifeline* is assigned a case worker that develops an individualized rehabilitation plan. The plan usually includes one of the three vocational skill training programs, including catering, beauty care, and dressmaking. *Lifeline* does not focus on formal education; however, all participants are required to complete functional literacy and entrepreneurial skill classes. These classes focus on basic terminology of their trade, business management, record keeping, saving, profit and loss, and customer care.[22,25] Psychosocial support is also provided by para-professional caseworkers, and *Lifeline* participants are able to get basic medical care through local health institutions.[22,25]

By the end of the program, participants are well prepared to take the entrance exam for admittance to the Ghana National Vocational Training Institute (NVTI) where they can obtain a basic national vocational training certificate. NVTI was funded by the UNDP and is administered by the national government. Once participants have completed their training – the rehabilitation phase of their three Rs – *Lifeline* finds mentors who provide apprenticeships for participants to work and continue training in their respective fields. Participants have a say in the location of this apprenticeship, and mentors are required to sign a contract with *Lifeline* to commit to provide training and to paying the women for their work.[22,25]

The present study

The present study is part of a long-term research program to develop and test evidence-informed intervention programs for women and girls who are survivors of trafficking in West Africa. Clearly, *Lifeline's* focus is to provide basic survival skills which are aimed at improving community reintegration and reducing the risks of re-trafficking among the women they serve. It is important that such programs also focus on the psychological and emotional health needs of trafficking survivors. This study assessed the psychological, social, and emotional needs and outcomes of trafficking survivors. Specifically, we tested a model of the effect of social support, coping, and community reintegration on PTSD with girls and women who received intervention from *Lifeline* and who are now back in the community.

Both social support and the level of social reintegration are important in helping trafficking survivors deal with trauma. An individual-level factor that is important and might interact with these community-level factors is the survivor's use of coping mechanisms. However, no previous research that we are aware of has examined how the relationships between coping, reintegration, and social support influence PTSD among survivors of trafficking. Given that individual-level variables, such as coping, interact with community-level factors, such as social support and reintegration, we used structural equation modeling to assess a conditional process model (moderated mediation) to examine the interaction of these factors in our proposed model.

We first hypothesized that community reintegration indirectly influences PTSD (0, not at all; 3, almost always) through its effect on perceived social support. Specifically, we expected to find that successful community reintegration (1, extremely easy; 5, extremely difficult) relates negatively to PTSD and positively to perceived social support (1, very strongly disagree; 7, very strongly agree). Also, we expected a negative relationship among perceived social support and PTSD. Thus, we expect a positive indirect effect from successful community reintegration to PTSD through perceived social support.

Further, we hypothesized that perceived social support had differential effects on PTSD, depending on the degree of dysfunctional coping. Specifically, we expected a negative interaction indicating that the more dysfunctional coping mechanisms used, (1, not doing this at all; 4, doing this a lot) the less beneficial social support becomes in relation to PTSD (i.e., the weaker the negative association between social support and PTSD). Similarly, we hypothesized that dysfunctional coping mechanisms would moderate the effect of community reintegration on PTSD. We predicted this interaction effect would be negative, indicating the more dysfunctional coping mechanisms used, the less community reintegration negatively predicts PTSD. A number of studies use the terms survivors and victims interchangeably. In this study however, we refer to victims as those still under the bondage of trafficking and survivors as those who were once in trafficking and are presently receiving some help or in recovery from the trauma.

Methods

Participants and procedure

To be included in the study, participants must have graduated between 2010 and 2015 and must have completed the intervention program. Between 2010 and 2015, 340

trafficking survivors were admitted to the *Lifeline* program. These years were chosen because Lifeline program officers expressed confidence in their ability to track participants only as far as 2010. Of these 340, 29 did not complete the program and consequently did not meet the criteria for inclusion in this study. Therefore, our initial sampling frame consisted of 311 women. The number of women who completed the program by year were: 91(2010), 89(2011), 54 (2012), 32 (2013), 20 (2014), and 25 (2015). The drop by year is explained by a reduction in funding for *Lifeline* over the years from both the local government and external donors.

Attempts were made to locate and recruit as many of these women as possible using the multiple approaches. An on-going supportive monitoring system used by *Lifeline*, including existing case records, was used to contact participants. Several of the agency's former clients remain in contact with the agency and were contacted about the study. *Lifeline* also used its collaborations with other NGOs, as well as government agencies such as the Department of Social Welfare, to locate and recruit study participants. However, locating and recruiting this transient population proved challenging, and the final sample for the study was $n = 144$, or 46% of the total 311 women included in the sampling frame.

The entire research questionnaire was translated into the local language, and then back translated into English by a translator who was blind to the original version. A comparison of the original instrument and the back-translation was then done to detect any discrepancies. Replication of this process was done as prescribed in questionnaires translation protocol.[26] Finally, a local researcher and subject expert provided input on the final interview document.

Data were collected in the summer of 2016 using face-to-face interviews by five local bi-lingual female researchers. Data collectors were trained on the *World Health Organization Ethical and Safety Recommendations for Interviewing Trafficked Women* protocol,[27] the relevant IRB protocols, as well as the study design and questionnaire. Data collection took place at *Lifeline* offices because many participants had indicated that preference. Informed consents were obtained from participants and a $30 incentive was awarded to study participants to compensate them for their travel and time in the study.

Study measures

The PTSD symptom scale (PTSD)

The severity of PTSD symptoms was captured by the PTSD Symptom Scale, Interview Version (PSS-I) (see Table 2) for use with female survivors of physical or sexual assault.[28] The PSS-I is a semi-structured interview consisting of 17 items that correspond to the symptom criteria for PTSD diagnosis in the DSM-IV.[29] It can be administered in 20 to 30 minutes by lay interviewers who have received about 3 hours of training.[28] For each of the 17 items, the interviewer assigns a combined rating of frequency and severity on a 4-point scale (Table 2). The reliability coefficient of the scale was good, *Cronbach's* $\alpha = 0.94$; $M = 1.36$ ($SD = 0.52$).

Brief cope (BC)-dysfunctional coping

The 28-item brief cope scale was developed to measure situational and dispositional coping styles of persons.[30] It includes 14 two-item scales: Self-distraction, Active coping, Denial, Substance use, Use of emotional support, Use of instrumental support, Behavioral disengagement, Venting, Positive reframing, Planning, Humor, Acceptance, Religion, and Self-blame. Twelve of the 28 items that measure avoidant coping or dysfunctional coping (items 1, 3, 4, 6, 8, 9, 11, 13, 16, 19, 21, and 26) were used. The items are assessed in a scale of 1—"Haven't been doing this at all" to 4—"I've been doing this a lot." The reliability coefficient of the brief cope scale was *Cronbach's* $\alpha = 0.95$, $M = 2.14$ ($SD = 0.05$).

Perceived social support (SS)

The Multidimensional Scale of Perceived Social Support (MSPSS) is a brief research tool designed to measure perceptions of support from three sources: Family, Friends, and a Significant Other.[31] The scale is comprised of 12 items, with four items for each subscale. In this study, the MSPSS scale showed a high alpha coefficient, *Cronbach's* $\alpha = 0.93$, $M = 4.48$ ($SD = 0.65$).

Level of community reintegration (LReint)

Participants were asked to report the ease of reintegrating back into the community after leaving *Lifeline* on a scale of 1–5: (1) extremely easy; (2) quite easy; (3) neither easy nor difficult; (4) quite difficult; and (5) extremely difficult. Table 1 presents the frequencies for this variable.

Analytic procedures

Data was initially entered and cleaned using IBM SPSS 23. Mplus 7.3 was used to conduct a conditional process analysis within the Structural Equation Modeling (SEM) framework that included both a mediation and moderation component.[32] To evaluate our first hypothesis, we assessed the degree to which perceived social support mediated the effect of community reintegration on PTSD among trafficking survivors by decomposing the total effect into direct and indirect effects corrected for unreliability (see Figure 1).

Table 1. Selected participant sociodemographic characteristics and experiences during trafficking (n = 144).

Characteristic	Frequency ($n = 144$)	%
Age		
17–19	16	11.1
20–24	78	54.2
25–29	48	33.3
≥ 30	2	1.4
Education		
No formal education	11	7.6
Primary or less	43	29.9
Secondary	86	59.7
Higher	1	.7
Refused to answer	3	2.1
Marital status at time of interview		
Married	17	11.8
Single	123	85.4
Other	4	2.8
Had children at time of interview		
Yes	41	28.5
No	98	68.1
Not answered	5	3.5
Year of intervention at Lifeline		
2010	62	43.1
2011	22	15.3
2012	10	6.9
2013	18	12.5
2014	12	8.3
2015	20	13.9
Time in trafficking situation (months)		
< 1	3	2.1
1–6	23	16.0
7–12	35	24.3
13–18	4	2.8
19–24	20	13.9
≥ 25	44	30.6
Don't know	15	10.4
Trafficking experiences		
Sexual violence	23	16.0
Physical violence	31	21.5
Emotional/psychological violence	76	56.8
Restrictions and confinement	44	30.6
Being locked in a room	12	8.3
Verbal abuse	85	59.0
Had child/ren at time of rescue		
Yes	7	4.9
No	136	94.4
Data missing	1	.7
How easy or difficult has it been to get back into the community after *Lifeline*?		
Extremely easy	16	11.1
Quite easy	24	16.7
Neither easy nor difficult	15	10.4
Quite difficult	35	24.3
Extremely difficult	54	37.5
Recurrent common health problems (self-report)		
Headaches	55	38.2
Feeling completely exhausted	38	26.4
Weight loss	35	24.3
Dizzy spells	20	13.9
Losing consciousness	16	11.1
Nausea or indigestion	15	10.4
Skin problems	15	10.4
Other	17	11.8
Number of hours worked per day		
Less than 8	37	25.6
8–10	35	24.3
10 or more	55	38.2
No fixed hours	17	11.8

First, we created domain-representative parcels of items to use as indicators for the perceived social support, coping mechanisms, and PTSD constructs based on the item-to-construct balancing technique.[33] In the current study, parcels were used for parsimony because we do not focus on the structure of a set of items, rather our goal was to examine the predictive relations among the constructs.[34] The tenability of the initial measurement model was assessed using alternative measures of model fit including the Root-Mean-Square Error of Approximation (RMSEA), the Tucker-Lewis index (TLI), and the Comparative Fit Index (CFI). Acceptable RMSEA values were less than or equal to 0.08, while values greater than 0.90 were considered acceptable for the TLI, and the CFI.[35]

Next, significance tests of mediation effects were carried out by testing the indirect effect for significance from zero using 95% bias-corrected confidence intervals (BC CI) across 10,000 bootstrap samples.[34,36,37] Significant mediation effects (i.e., 95% BC CI that do not include zero) indicate that community reintegration influenced perceived social support which, in turn, influenced PTSD. The bootstrap technique has been advocated as a more powerful test for mediation than alternative approaches (i.e., causal steps approach, Sobel test).[38]

To evaluate our second hypothesis, we assessed the degree to which coping mechanisms would moderate the mediation effects by testing interactions among latent variables using the Latent Moderated Structural equations (LMS) approach (see Figure 1).[39] Significant moderation of the indirect effect was evaluated with BC

Table 2. PTSD symptom scale.

Item	Description
1	Having upsetting thoughts or images about the traumatic event that come into your head when you did not want them to
2	Having bad dreams or nightmares about the traumatic event
3	Reliving the traumatic event (acting as if it were happening again)
4	Feeling emotionally upset when you are reminded of the traumatic event
5	Experiencing physical reactions when reminded of the traumatic event (sweating, increased heart rate)
6	Trying not to think or talk about the traumatic event
7	Trying to avoid activities or people that remind you of the traumatic event
8	Not being able to remember an important part of the traumatic event
9	Having much less interest or participating much less often in important activities
10	Feeling distant or cut off from the people around you
11	Feeling emotionally numb (unable to cry or have loving feelings)
12	Feeling as if your future hopes or plans will not come true
13	Having trouble falling or staying asleep
14	Feeling irritable or having fits of anger
15	Having trouble concentrating
16	Being overly alert
17	Being jumpy or easily startled

Note. Response options: 0 = Not at all, 1 = Once per week or less/a little bit/once in a while, 2 = *Two to four times per week/somewhat/half the time*, 3 = *Three to five or more times per week/very much/almost always*.

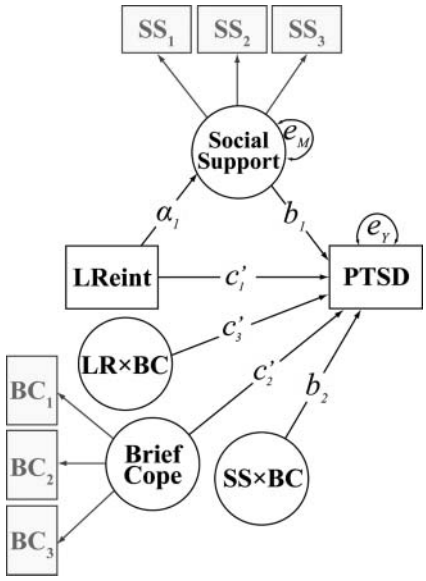

Figure 1. Conceptual diagram of the moderated mediation relationship. Key: LReint = Level of community reintegration; BC = Brief cope (Dysfunctional coping); SS = Perceived social support

CI using the simple slopes technique to determine values of the moderator for which the indirect effect is significant.[36,37,40]

Results

Sociodemographic descriptives

Table 1 presents sociodemographic data. Of the $n = 144$ study participants, 43 (29.9%) completed the program in 2010, 22 (15.3%) in 2011, 10 (6.9%) in 2012, 18 (12.5%) in 2013, 12 (8.3%) in 2014, and 39 (27.1%) in 2015. The age range was 23–34 ($M = 23$; $SD = 2.89$), indicating that participants were between 17 and 28 years at the time they entered the *Lifeline* program, and even younger while in trafficking conditions. Eighty-six (59.7%) had some secondary school education while 43 (29.9%) had only elementary school education.

A third of the participants spent over two years in trafficking conditions and among the experiences faced were sexual violence (16%), psychological abuse (57%), restrictions and confinement (31%), and physical violence (22%). At the time of the interview, self-reported persistent health problems included headaches (38%), feeling completely exhausted (26%), weight loss (24%), and skin problems (10%).

Measurement model

The initial measurement model contained three constructs including social support, PTSD, and coping mechanisms; each indicated by three parcels (See Figure 1). The measurement model contained no double loadings or residual correlations. Results indicate model fit was excellent, χ^2 (24, $n = 144$) = 44.62, $p = 0.01$, RMSEA = 0.077, 90% CI [0.040, 0.112], TLI = 0.976, CFI = 0.984, which support the use of the SEM approach to correct for measurement error (scale unreliability).[35]

Mediation model-Influence of reintegration on PTSD through social support

Our first hypothesis stated that community reintegration indirectly influences PTSD through its effect on perceived social support. A SEM mediation analysis was conducted using Maximum Likelihood estimation.[41] Results support this hypothesis and indicate that community reintegration indirectly influenced PTSD through its effect on perceived social support. Specifically, trafficking survivors who reported more difficulty reintegrating back into the community perceived less social support than those that reported easier community reintegration ($\alpha_1 = -0.252$), and trafficking survivors who perceived less social support indicated more PTSD ($b_1 = -0.149$). A 95% bias-corrected bootstrap confidence interval for the indirect effect ($\alpha_1 b_1 = 0.136$) based on 10,000 bootstrap samples did not include zero (0.036 to 0.537). There was no evidence that community reintegration influenced PTSD independent of its effect on perceived social support ($c_1' = 0.011$, $p = 0.714$).

Moderated mediation model—Conditional effect of dysfunctional coping on social support as a mediator of reintegration on PTSD

Second, we hypothesized that the effect of perceived social support on PTSD and the effect of community reintegration on PTSD are contingent on the degree to which trafficking survivors use dysfunctional coping mechanisms, with a negative interaction indicating that the more dysfunctional coping mechanisms used, the less beneficial social support becomes in relation to PTSD.

From a moderation analysis of the b_1 and c_1' predictive effects (see Figure 1), results indicate survivors who reported using more dysfunctional coping mechanisms received less benefit from perceived social support in relation to decreased PTSD symptoms ($b_2 = -0.132$). However, there was no indication that community reintegration had different effects on PTSD based on the number of dysfunctional coping mechanisms used ($c_3' = 0.019$, $p = 0.651$). Trafficking survivors with more PTSD symptoms tended to report using more dysfunctional coping mechanisms ($c_2' = 0.958$) (see Table 3).

As expected this interaction effect was negative, indicating the more dysfunctional coping mechanisms used,

Table 3. Model coefficients for PTSD.

		Social Support (SS)				PTSD		
Antecedent		Coeff.	SE	*p*		Coeff.	SE	*p*
LReint (LR)	α_1	−0.252	0.092	0.006	c'_1	0.029	0.043	0.500
Social Support (SS)		—	—	—	b_1	−0.122	0.049	0.013
Brief Cope (BC)		—	—	—	c'_2	0.958	0.318	0.003
LR x BC		—	—	—	c'_3	0.019	0.042	0.651
SS x BC		—	—	—	b_2	−0.132	0.049	0.007
Constant	i_1	5.176	0.315	0.000	i_2	0.958	0.326	0.003
			$R^2 = .049$				$R^2 = .773$	

Key: LR = Level of community reintegration.

the less community reintegration negatively predicts PTSD. The conditional effect of dysfunctional coping (1, low; 2.5, medium; 4, high) on perceived social support as a mediator of level of community reintegration on PTSD are shown in Table 4 and Figure 2. A bias-corrected bootstrap confidence interval for each conditional indirect effect indicated the mediation effect was consistently positive and increased with increasing use of dysfunctional coping mechanisms. As shown in Figure 2, the largest indirect effect was observed among trafficking survivors that reported high use of dysfunctional coping mechanisms and difficult community reintegration.

Table 4. Conditional effect of dysfunctional coping on social support as a mediator of level of community reintegration on PTSD.

		PTSD	
Effect	Brief Cope	Coeff.	95% BC Bootstrap CI
Indirect	Low	0.064	0.010 to 0.154
	Medium	0.114	0.018 to 0.283
	High	0.164	0.026 to 0.385
Direct	Low	0.048	−0.208 to 0.122
	Medium	0.077	−0.399 to 0.218
	High	0.105	−0.589 to 0.322
Total	Low	0.112	−0.014 to 0.207
	Medium	0.190	−0.033 to 0.336
	High	0.269	−0.085 to 0.496

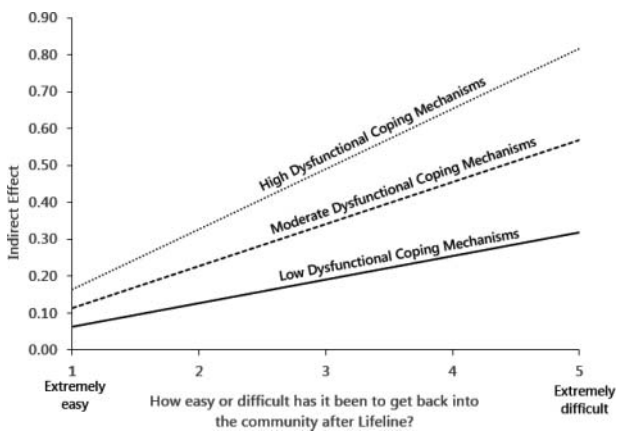

Figure 2. Level of reintegration on PTSD by perceived social support via Brief Cope (dysfunctional coping).

Discussion

The overall goal of this study was to examine the effects of social support, dysfunctional coping, and community reintegration on PTSD among survivors of trafficking who received psychosocial and economic development intervention at a residential care facility. To address these research questions, we used a conditional process model within a SEM framework. This approach combined mediation and moderation approaches into a single model to estimate direct and indirect paths which may be moderated through the use of dysfunctional coping mechanisms. Our use of latent variables within the conditional process model allowed us to correct for measurement error and theoretically improve power for detecting effects.

We found that poor community reintegration had a positively trending, though non-significant, association with PTSD. Survivors who reported more difficulty reintegrating back into the community reported less social support than those that reported easier community reintegration. Further, perceived social support was negatively related to PTSD. These findings are very similar to others that show the importance of social support in mitigating PTSD.[17] To our knowledge, this is the first study to examine the mental health (PTSD) outcomes of trafficked women post-reintegration in relation to social support and dysfunctional coping mechanisms.

Community reintegration has a positive and significant indirect effect on PTSD through social support. Further, we found evidence that coping mechanisms moderated the path from perceived social support to PTSD as expected; however, there was no evidence that community reintegration influenced PTSD independent of its influence through perceived social support.

These results support the notion that, among trafficking survivors, perceived social support functions as a

mediator between experiencing difficulty in community reintegration and symptoms of PTSD. Perceived social support was negatively related to PTSD, suggesting that social support provides a protective element, reducing PTSD symptoms.[19,20] Our findings are in line with previous research indicating that, six-months post reintegration, trafficked women with more social support were less likely to have a diagnosis of any mental disorder.[17]

However, our finding of a positive indirect effect between community reintegration and PTSD symptoms through social support suggests that difficulty in community reintegration reduces the mental health protection provided by social support. Further, we found perceived social support significantly mediated the effect of community reintegration on PTSD regardless of the degree to which trafficking survivors used dysfunctional coping mechanisms, as each of the three conditional indirect effects were significant (see Table 4 and Figure 2).

Interestingly, the indirect effect of difficulties in community reintegration increased as the use of more coping mechanisms was endorsed. This suggests that the more difficult the community reintegration, the less protection offered by social support, and this protection is further decreased among women reporting using more coping mechanisms compared to those using fewer coping mechanisms. While this seems counter-intuitive, this finding supports the notion that the relationship of coping with mental health outcomes is curvilinear. Those who do not use adequate coping mechanisms continue to experience stress. Once coping mechanisms have been successful in reducing stress, the use of more coping mechanisms becomes unnecessary. However, those who have not been successful in coping continue to employ more coping mechanisms, resulting in higher scores on coping scales to yield positive correlations with stress and mental health symptoms.[46]

Existing studies with trafficking survivors do not assess the role of individual coping in relation to social support. A micro-macro framework is important in assisting trafficking survivors who may be experiencing trauma.[42] One critical coping mechanism for trafficking survivors would be to be able to find social support, which would in turn help reduce their stress and any psychological or mental health challenges. In fact, we found that participants who had difficulties in reintegrating into the community also perceived the social support in those communities to be lower. To strengthen reintegration into the community for trafficking survivors, it is important to not only identify and strengthen available social supports, but also to prepare survivors to access these supports and use them to their advantage.

Further, it is also important to focus on the social environment in which survivors will return at the completion of intervention programs; this is clearly a challenge given the lack of knowledge and awareness about trafficking in most communities across the world.[43] Those who perceived that the community to be supportive reported fewer symptoms of PTSD than those who reported less social support. Working with the families, friends, and significant others of trafficking survivors to provide adequate and appropriate support is likely important in achieving successful reintegration and positive outcomes for survivors. Interventions and programs aiming to assist survivors should seek to engage relevant social structures in communities, including social, economic, and psychological supports.

One interesting finding in this study is the lack of significant result between participants' levels of reintegration and PTSD, although we not that this relationship did trend toward significant. Currently, we know of no studies that provide normative benchmarks for successful reintegration, nor studies of PTSD symptoms among trafficking survivors in Ghana with which to compare our results. However, we would expect that adequate support and feeling welcome and part of a community would help in reducing trauma among survivors. *Lifeline* offers reintegration supports to its clients that are aimed at providing stability and reducing the risks of re-trafficking, and we suspect that success in this regard may limit the variability in outcome, thus reducing the range for prediction in our data.

There are several limitations which must be considered in this study. While the sample size in the study is comparable to many studies on the topic, and while it is unique in terms of location, caution is offered. It is possible that our sampling strategy identified study participants who were among the *Lifeline* graduates who have better outcomes. It is plausible that those who could not be reached (54% of 311) may have experienced worse outcomes on PTSD, community reintegration, or are even back into trafficking conditions. Also, while study participants received intervention through the *Lifeline* program, this is a cross-sectional study and causality cannot be inferred. Finally, we note that this is not an evaluation of *Lifeline* services, and we cannot comment on the efficacy of this program.

Conclusions

Trafficking is ubiquitous around the world.[44] Trafficking is increasing in Africa in part due to globalization and the rise of major urban centers. Victims are also trafficked to the Middle East and Europe.[45] More research is needed to understand trafficking holistically and to provide culturally-relevant and sustainable programs that help policy makers, researchers, and frontline workers

such as the *Lifeline* personnel to better assist survivors and survivors. Specifically, more attention is needed on the long-term mental health of survivors. This is extremely important in contexts where mental health issues have traditionally been viewed as a lesser priority. Stigma tied to both mental health and being trafficked can also be an obstacle to proper identification and care for survivors with mental health problems.

It is critical to identify local solutions to address PTSD and other mental health challenges among trafficking survivors, particularly in preparing and mobilizing community and social supports at the policy, community, health systems, and family levels. Further, programs can assist survivors to adequately recognize, access and utilize existing supports. Such efforts may serve an important avenue to enhance women's lives and putting them on a path to better overall health, as well as reducing stigma, revictimization, or re-trafficking.

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