Social and Psychological Correlates of Mass Psychogenic Illness in Nepal

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Thesis Abstract

Mass psychogenic illness (MPI), also known as mass/epidemic hysteria, mass sociogenic illness, mass conversion disorder, and epidemic of medically unexplained illness, is a globally occurring dissociative phenomenon. In contemporary Nepal, MPI is widespread and a large number of young children and adolescents in schools as well as adult women in some communities are affected in clusters by unintentional trance and possession episodes, known as chhopne/chhopuwā in the Nepali language. In recent years, there has been a burgeoning recognition of and interest in MPI in Nepal. For example, the Ministry of Health (MoH) Nepal has included MPI in the training curriculum for primary health workers and some nonprofit organizations in Nepal have published psychoeducational materials on MPI and guidelines on how to manage MPI outbreaks. However, the possible causes and correlates of these epidemics are not well understood and have not been widely studied in Nepal. As a result, existing guidelines are largely based on generic information on MPI in the western psychiatric literature. The dearth of studies on the potential causes and correlates of MPI in Nepal represents a significant knowledge gap with implications for intervention.

This thesis was driven by the premise that effective management of MPI requires a comprehensive understanding of its causes and correlates. Three studies were conducted to examine the social and psychological correlates of mass psychogenic illness involving a cluster of adult women in a community and adolescent children in schools in Nepal. The aim of these studies was to test existing hypotheses about the etiology of MPI by comparing afflicted and control populations with regard to (a) prior exposure to trauma, (b) underlying mental health problems, (c) personality traits, and (d) level of dissociative experiences

To achieve this aim, first, we conducted a case study following a mixed-methods case-

control design in a village in central Nepal with a cluster of women experiencing unintentional spirit possession episodes. This study assessed sociocultural context, prior exposure to trauma, and prevalence of symptoms of common mental disorders in women who had (n=22) and had not (n=16) experienced possession (N=38). Quantitative results indicated that possessed women had higher rates of traumatic exposure and higher levels of symptoms of mental disorder compared to non-possessed women. However, qualitative interviews with possessed individuals and their non-possessed friends, family members, and traditional healers painted a different picture. Spirit possession was viewed as an affliction that provided a unique mode of communication between humans and spirits. Thus, it was concluded that possession was better understood not as a specific form of psychopathology but as an *idiom of distress*, that is, an avenue to communicate and cope with distress associated with existing psychosocial problems.

Secondly, we conducted a cross-sectional survey of adolescents (N=314) from five schools in three districts of Nepal. Using a path analysis model, this study evaluated the applicability of three existing theoretical models to explain dissociative experiences and behaviors (DEBs), namely: (1) childhood trauma; (2) cognitive and personality traits (i.e., cognitive failures, fantasy proneness, emotional contagion); and (3) current distress (i.e., quality of life, depression, posttraumatic stress). Results confirmed that the factors associated with all three models were correlates of DEBs, however, only cognitive failures (lapses in day-to-day memory) and posttraumatic stress emerged as significant predictors of DEBs in the path analysis. Simple mediation analysis using posttraumatic stress and cognitive failures as mediators in separate mediation models confirmed the full mediation of the effect of childhood trauma on dissociation. This suggests that childhood trauma along with all of the other personality and distress variables assessed are important correlates of DEBs; however, they are not always present and are neither

necessary nor sufficient to produce dissociation. Various socioecological factors, cognitive and personality traits, and other contextual factors not measured in this study may play an important role in determining the occurrence of dissociative experiences and behaviors.

Thirdly, we conducted a case-control study with adolescent children affected (cases) by MPI that involved dissociative trance and possession episodes (chhopne) and their friends who had never experienced *chhopne* (N=379). This study aimed to evaluate if DEBs and their correlates identified in the previous study could predict epidemics of episodes of *chhopne* among children in schools in Nepal affected by MPI episodes. Bivariate logistic regression models showed that family type (i.e., nuclear family), childhood trauma, a higher tendency to dissociative experiences, prior experience of peritraumatic dissociation, depression, and hypnotizability were significant predictors of caseness, that is, the odds of being a case (being affected in MPI) among those who lived in the nuclear family, traumatic experience in childhood, current depressive symptoms, a higher tendency to dissociative experiences, prior experience of peritraumatic dissociation, and higher hypnotizability was greater than the odds of being a case among those without such experiences and characteristics. However, in terms of DEBs and their correlates predicting caseness in MPI episodes, results were mixed. Multiple logistic regression showed that only a few variables, physical abuse, peritraumatic dissociation, and hypnotizability significantly differentiated affected from not affected. Further, family type, which was not a significant predictor of DEBs in the previous study turned out to be a significant predictor of caseness in MPI. Taken together, the results suggest that adolescents with higher susceptibility to suggestion, living in nuclear families, who have experienced physical abuse and peritraumatic dissociation are more likely to be affected by MPI episodes.

The findings from these studies have important implications for understanding the

possible causes and correlates of MPI phenomena and may guide the development of appropriate prevention and intervention strategies for MPI in Nepal and beyond.

Résumé de la Thèse

La maladie psychogénique de masse (MPI), également connue sous le nom d'hystérie épidémique/collective, maladie sociogénique de masse, trouble de conversion de masse, et maladie épidémique médicalement inexpliquée est un phénomène de dissociation qu'on observe à l'échelle mondiale. Dans le Népal contemporain, la MPI est largement répandue et un grand nombre de jeunes enfants et d'adolescents dans les école ainsi que des femmes adultes dans certaines communautés sont touchés collectivement par des épisodes de transe et de possession involontaires, connues sous le nom de *chhopne/chhopuwā* en népalais. Au cours des dernières années, le Népal a manifesté un intérêt croisant et une reconnaissance grandissante à l'égard de la MPI. Par exemple, le ministère de la Santé (MoH) du Népal a inclus la MPI dans le programme de formation des agents sanitaires primaires, et certaines organisations à but non lucratif népalaises ont publié des documents psychoéducatifs sur la MPI et émis des lignes directrices sur la façon de gérer les épidémies de MPI. Cependant, les causes et corrélats possibles de ces épidémies ne sont pas très bien compris et n'ont pas été suffisamment étudiés au Népal. En conséquence, les lignes directrices actuelles reposent en majeure partie sur des informations générales sur la MPI tirées de la littérature psychiatrique occidentale. Le manque d'études sur les causes et corrélats potentiels de la MPI au Népal constitue une lacune importante en matière de connaissances et comporte des implications au niveau de l'intervention.

Cette thèse repose sur la prémisse qu'une gestion efficace de la MPI nécessite une compréhension de ses causes et corrélats. Trois études ont été menées afin d'examiner les corrélats psychosociaux de la maladie psychogénique collective auprès d'un groupe de femmes adultes au sein d'une communauté et d'adolescents fréquentant des écoles népalaises. Ces études visaient à

vérifier les hypothèses existantes sur l'origine de la MPI en comparant les populations touchées et témoins en ce qui concerne (a) les antécédents traumatiques, (b) les problèmes de santé mentale sous-jacents, (c) les traits de personnalité, et (d) le niveau d'expériences dissociatives.

En vue d'atteindre cet objectif, nous avons d'abord réalisé une étude cas-témoins, en recourant à une méthodologie mixte, auprès d'un groupe de femmes ayant vécu des épisodes involontaires de possession d'esprit dans un village du centre du Népal. Cette étude a évalué le contexte socioculturel, les antécédents traumatiques et la prévalence des symptômes de troubles mentaux actuels chez les femmes ayant (n=22) et n'ayant pas (n=16) vécu de possession (N=38). Les résultats quantitatifs indiquent que les femmes possédées avaient des taux plus élevés d'antécédents traumatiques et des niveaux plus élevés de symptômes de troubles mentaux comparativement aux femmes non possédées. Cependant, des entrevues qualitatives menées auprès de personnes possédées et de leurs amis non possédés, des membres de leur famille et des guérisseurs traditionnels ont permis de brosser un portrait tout autre de la situation. Ainsi, la possession de l'esprit était plutôt considérée comme une affliction qui fournissait un mode de communication unique, voire privilégié, entre les humains et les esprits. Il a donc été conclu que la possession était mieux comprise non pas comme une forme spécifique de psychopathologie, mais comme un idiome de détresse, c'est-à-dire comme un moyen de communiquer et de faire face à la détresse associée aux problèmes psychosociaux existants.

Deuxièmement, nous avons effectué une enquête transversale auprès d'adolescents (N=314) de cinq écoles dans trois districts du Népal. À l'aide d'un modèle d'analyse de pistes causales, cette étude a évalué l'applicabilité de trois modèles théoriques existants pour expliquer les expériences et comportements dissociatifs (DEBs), à savoir : (1) les traumatismes subis durant l'enfance; (2) les traits cognitifs et de personnalité (c.-à-d. les défaillances cognitives, la

prédisposition aux fantasmes, la contagion émotionnelle); et (3) la détresse actuelle (c.-à-d. la qualité de vie, la dépression, le stress post-traumatique). Les résultats ont confirmé que les facteurs associés aux trois modèles étaient corrélés aux DEBs, mais au terme de l'analyse de pistes causales seules les défaillances cognitives (trous de mémoire au quotidien) et le stress post-traumatique se sont révélés des prédicteurs significatifs des DEBs. Une analyse de médiation simple utilisant le stress post-traumatique et les défaillances cognitives comme médiateurs dans des modèles de médiation distincts a confirmé la médiation complète de l'effet des traumatismes subis durant l'enfance sur la dissociation. Cela suggère que les traumatismes subis durant l'enfance ainsi que toutes les autres variables de personnalité et de détresse évaluées sont des corrélats importants des DEBs; cependant, ils ne sont pas toujours présents et ne sont ni nécessaires, ni suffisants, pour provoquer une dissociation. Divers facteurs socioécologiques, traits cognitifs et de personnalité ainsi que d'autres facteurs contextuels non mesurés dans la présente étude peuvent aussi jouer un rôle important dans la détermination de la survenue d'expériences et de comportements dissociatifs.

Troisièmement, nous avons mené une étude cas-témoins auprès d'adolescents touchés (cas) par la MPI qui comportait des épisodes dissociatifs de transe et de possession (*chhopne*) et auprès de leurs amis qui n'avaient jamais eu de *chhopne* (N = 379). Cette étude visait à évaluer si les DEBs et leurs corrélats identifiés dans l'étude précédente pouvaient prédire les épidémies d'épisodes de *chhopne* chez les adolescents fréquentant des écoles népalaises touchés par des épisodes de MPI. Les modèles de régression logistique bivariée ont montré que le type de famille (c.-à-d. famille nucléaire), les traumatismes subis durant l'enfance, une propension plus grande aux expériences dissociatives, des antécédents de dissociation péritraumatique, la dépression et l'hypnotisabilité étaient des prédicteurs significatifs des cas répondant à la définition de MPI, à

savoir que la probabilité de répondre à la définition de cas (c.-à-d. d'être effectivement touché par la MPI) était plus élevée chez les individus vivant au sein d'une famille nucléaire, ayant subi des expériences traumatiques durant l'enfance, présentant des symptômes dépressifs actuels, ayant une propension plus grande aux expériences dissociatives, des antécédents d'expériences de dissociation péritraumatique, et une plus grande hypnotisabilité que chez les individus sans ces expériences et caractéristiques. Toutefois, pour ce qui est de la capacité des DEBs et de leurs corrélats à prédire les cas répondant à la définition lors d'épisodes de MPI, les résultats étaient mitigés. Ainsi, la régression logistique multivariée a montré que seules quelques variables, soit les sévices, la dissociation péritraumatique et l'hypnotisabilité différenciaient significativement les personnes touchées de celles qui ne l'étaient pas. De plus, le type de famille, qui n'était pas un prédicteur significatif des DEBs dans l'étude précédente, s'est révélé un prédicteur significatif des cas répondant à la définition de MPI. L'ensemble de ces résultats suggèrent que les adolescents ayant une plus grande sensibilité à la suggestion, vivant dans des familles nucléaires, ayant subi des sévices et connu des expériences de dissociation péritraumatique sont plus susceptibles d'être touchés par des épisodes de MPI.

Les résultats de ces études ont d'importantes implications pour la compréhension des causes et corrélats possibles du phénomène de MPI et peuvent servir à orienter l'élaboration et la mise en œuvre de stratégies de prévention et d'intervention appropriées pour la MPI au Népal et ailleurs.

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Preface and Contribution of Authors

This thesis consists five chapters. The first chapter introduces the topic of this thesis, Chapters 2, 3, and 4 provide details of three different studies that were conducted to identify the potential correlates of MPI outbreaks in schools and communities in Nepal. In Chapter 5, a summary of the major findings, possible implications and concluding remarks are presented.

Chapter 1 sets the stage with a general introduction of the topic and research objectives. In the literature review section, an overview of the existing literature is presented in which definitional issues, types of MPI outbreaks, a brief history, and the epidemiology are discussed. The review of the literature shows that despite a long history, MPI is a poorly understood phenomenon and there is a need for scientific studies to identify the potential causes and correlates of MPI in order to understand the phenomenon and to appropriately manage the MPI outbreaks. To address this gap in the understanding and existing knowledge of MPI phenomenon, the first study was conducted following a mixed-methods case-control design with a cluster of women experiencing unintentional spirit possession episodes in a village in central Nepal. This study assessed various demographic data, sociocultural context, prior exposure to trauma, and prevalence of symptoms of common mental disorders in women who had and had not experienced possession. Quantitative results indicated that possessed women had higher rates of traumatic exposure and higher levels of symptoms of mental disorder compared to nonpossessed women. However, qualitative interviews showed that spirit possession was more likely an avenue to cope with and communicate distress – an idiom of distress. In terms of existing models of dissociative experiences and behaviors (DEBs), this study assessed mainly the factors associated with current distress. The report of this study is presented in Chapter 2.

The second study opted to test three existing theoretical models of dissociation (i.e.,

childhood trauma, current distress and personality traits) with adolescent population who were not affected by MPI. A cross-sectional survey with healthy adolescents from five schools in three districts of Nepal was conducted. Results confirmed that the factors associated with all three models were the correlates of DEBs, however, only cognitive failures (lapses in day-to-day cognitive processing) and posttraumatic stress (PTS) emerged as significant predictors of DEBs in the path analysis. Simple mediation analysis using posttraumatic stress and cognitive failures as mediators in separate mediation models confirmed the full mediation of the effect of childhood trauma on dissociation by each of the predictors. Using a path analysis, an integrated model of DEBs was developed. The report of this study is presented in Chapter 3. The third study tested the applicability of the integrated model of DEBs in predicting caseness in MPI outbreaks in schools. A case-control study was conducted with adolescent children affected (cases) by MPI and their friends who had never experienced trance and possession episodes. The bivariate binary logistic regression models showed that family type (i.e., nuclear family), childhood trauma, a higher tendency to dissociative experiences, prior experience of peritraumatic dissociation, depression, and hypnotizability were significant predictors of caseness. However, in terms of models of dissociation predicting caseness in MPI episodes, results were mixed. Multiple logistic regression showed that only a few variables, physical abuse, peritraumatic dissociation, and hypnotizability significantly differentiated affected from not affected. Further, family type, which was not a significant predictor of DEBs in the previous study turned out to be a significant predictor of caseness in MPI. The results indicated that adolescents with higher susceptibility to suggestion, living in nuclear families, who have experienced physical abuse and peritraumatic dissociation are more likely to be affected by MPI episodes. The report of the third study is presented in Chapter 4. In this thesis MPI was

approached mainly from a mental health perspective - as a conversion disorder or dissociative phenomenon, therefore, this thesis concludes with some remarks on the alternative approaches to MPI.

Contribution of Authors

All the research studies included in this thesis were conducted in Nepal by the student with regular support and supervision from the supervisor, Dr. Laurence Kirmayer. All the chapters included in this thesis were written by the student with direct supervision and support from the supervisor, Dr. Laurence Kirmayer.

A version of the study reported in Chapter 2 was published as: Sapkota, R. P., Gurung, D., Neupane, D., Shah, S. K., Kienzler, H., & Kirmayer, L. J. (2014). A village possessed by "witches": A mixed-methods case–Control study of possession and common mental disorders in rural Nepal. *Culture, Medicine, and Psychiatry*, *38*(4), 642-668.

This study was conducted by the student (the first author). Gurung, Neupane, and Shah contributed in data collection and analysis. Kienzler, and Kirmayer contributed in writing and the revision of the article.

Chapter 1: Introduction

Mass psychogenic illness (MPI) is a common occurrence in Nepal. A large number of young children and adolescents in schools are affected every year by trance and possession episodes, known as *chhopne/chhopuwā* in Nepali (Pach, Rimal, & Shrestha, 2002; Sapkota et al., 2014; Van Ommeren et al., 2001). Numerous outbreaks of MPI episodes have been reported in the local and national media in recent years. Sapkota and Kirmayer (in preparation), for example, have recorded 150 such outbreaks occurring in schools and rural communities in Nepal over a period of twenty years (1997-2016). More than 2000 individuals, mainly pre-adolescents and adolescents, were affected in these outbreaks. Affected individuals report significant distress and both somatic and psychological symptoms during and after the episodes (Sapkota et al., 2014; Shakya, 2005; Sharma, Jha, Joshi, & Lamsal, 2010; Van Ommeren et al., 2001). Understandably, these outbreaks have had a direct impact on the daily lives of these affected children, but the ripple effect on other classmates, teachers, family members and the entire community may be even more profound (see: Clements, 2003).

There is a rich ethnographic literature on spirit possession experiences and behaviors in Nepal (e.g., Fisher, 1989; Hitchcock, 1967; Hitchcock & Jones, 1976). However, these anthropological studies are mainly centered on intentional spirit possession as part of religious and healing practices and may therefore be of limited relevance to understanding the experience of those suffering from episodes of unintentional dissociative trance and possession (E. Cohen, 2008; E. Cohen & Barrett, 2008) [see: Chapter 2 of this thesis for a discussion on intentional and unintentional spirit possession in Nepal]. The lack of studies on unintentional trance and possession and MPI in Nepal and worldwide represents a significant knowledge gap with implications for intervention.

In recent years, there has been a burgeoning recognition of and interest in MPI in Nepal. There have been efforts on the part of the government as well as nongovernmental organizations (NGOs) to develop guidelines and train health workers to identify and manage MPI outbreaks (e.g., MoH Nepal, 2016). However, efforts to control MPI in schools in Nepal have not been entirely successful as reflected by the fact that some schools have been continuously affected by MPI episodes for 10 to 12 years and that, as a result, some are on the verge of permanent closure (Sapkota & Kirmayer, in preparation; Shakya, 2013).

To better understand the MPI phenomenon and to effectively manage MPI outbreaks in schools, more needs to be known about the possible causes, correlates and social contexts of MPI. We therefore set out to advance the understanding of MPI through a series of qualitative and quantitative studies in schools and communities in Nepal. This thesis reports three, mainly quantitative studies, of the series of studies conducted.

1.1 Research objectives

The overall objective of this doctoral work was to identify the potential correlates of mass psychogenic illness (MPI) outbreaks in schools and communities in Nepal. The specific aims of three studies were as follows:

Study1: Mass Psychogenic Illness in a Community: A Mixed Methods Case Study

- A. To explore the association between spirit possession and common mental disorders.
- B. To investigate the relationship between sprit possession and psychosocial factors including traumatic experiences, coping, perceived social support, and impairment in functioning.

- Study 2: Correlates of Dissociative Experiences and Behaviors in Adolescents
- A. To assess the psychometric properties of the culturally and semantically adapted instruments used to assess DEB and its correlates.
- B. To test if the various models of dissociative experience—namely, childhood trauma, current distress (quality of life, depression and post-traumatic stress), and personality traits and distortions in cognitive processing (cognitive failures, fantasy proneness and emotional contagion)—are applicable in a healthy adolescent population sample.
- C. To develop and test an integrated model of dissociative experience.
- Study 3: Correlates of Mass Psychogenic Illness Outbreaks in Schools in Nepal: A Case-Control Study

A. To test the applicability of existing models of dissociation in predicting caseness (i.e., being affected or being ill) in MPI outbreaks in schools in Nepal with regard to: (i) exposure to trauma in childhood, (ii) current distress, (iii) personality traits and distortions in cognitive processing, and (iv) dissociative experiences and behaviors (i.e., dissociative tendency and peritraumatic dissociation).

1.2 Literature review

Mass Psychogenic Illness (MPI) is a term used to describe the phenomenon of spread or contagion of "illness behaviors" (Mechanic, 1986, p. 101; also see: Wessely, 1987) in a cluster of generally "normal" individuals. The characteristic behaviors or symptoms exhibited by the afflicted people are suggestive of illness but are medically unexplained, and are therefore presumed to be psychogenic (Barsky & Borus, 1999; Bartholomew & Sirois, 1996; Bartholomew & Wessely, 2002; Bartholomew, Wessely, & Rubin, 2012; B. G. Cohen, Colligan, Wester, &

Smith, 1978; M. J. Colligan & Murphy, 1979; Eaton, 1999; Gamino, Elkins, & Hackney, 1989; Pennebaker, 1982; Sirois, 1974, 1999). Historically, many different terms have been used to label¹ and characterize MPI episodes, including: psychic epidemics, collective psychoses, mass delusions, hysterical or behavioral contagion, social contagion, group or collective psychopathology, group or mass conversion reaction, mass or epidemic hysteria, and mass sociogenic illness (Bartholomew, 1990; Bartholomew & Wessely, 2002; Boxer, 1985; Rosen, 1960).

The symptoms and mechanism of spread of MPI may vary in different social and cultural settings (Bartholomew, 1990, 1994; Eaton, 1999; Kerckhoff, 1982; Pennebaker, 1982; Wessely, 1987). MPI outbreaks may involve different processes or mechanisms in a cohesive community or in an institutional setting (i.e., school, factory), where people are familiar with each other, have close ties, and share similar worldviews compared to the outbreaks in settings where people are not familiar with each other and may not have similar worldviews (i.e., airports, bus/train stations)(see: Sirois, 1974; Wessely, 1987). A typical episode of MPI begins with an individual becoming ill or showing signs and symptoms of an illness such as headache, dizziness, nausea,

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¹ It is noteworthy that the use of multiple labels is not limited to illness behaviors in clusters (i.e., MPI). Various terminologies have been used for each of the individual forms of "psychogenic" illness behaviors, known as somatization disorder, conversion disorder and dissociative disorders in psychiatric nomenclature (i.e., DSM and ICD). For example, regarding the proliferation of terminologies for conversion disorder Ding and Kanaan (2017, p. 51) aptly reflected, "The historical term, hysteria, was replaced by conversion disorder as recently as ICD-10 and DSM-III... New terminology has flowered, but divided along aetiological lines (dissociation, stress) and those that shun aetiology (unexplained, non-epileptic); and between those of neurologists (functional, non-organic) and psychiatrists (conversion, psychosomatic). There is no consensus, even among the official diagnostic manuals, with both ICD and DSM hedging their bets, in "dissociative (conversion) disorder" and "conversion (functional neurological) disorder, respectively." (see: van der Hart & Dorahy, 2009 for the list of terminologies historically used to for dissociation).

abdominal pain, weakness, hyperventilation, fits, trance states and fainting attacks or any number and types of other symptoms that are reflective of the perceived or real threat or the presumed cause of the illness (Kuchinski & Colligan, 1979; Pennebaker, 1982). In the beginning, the outbreak may be confined to a small and close group of people with "similar risk profiles" (Barsky & Borus, 1999, p. 912). However, over time, the contagion spread to affect a large number of people (Tseng, 2001). This contagion effect is influenced by witnessing the behavior of afflicted individuals or by the communication of rumors and stories of the outbreak through word of mouth, or through media (Bartholomew & Wessely, 2002; Boss, 1997; Cole, Chorba, & Horan, 1990; Kerckhoff, 1982; Kerckhoff & Back, 1965; Sirois, 1974; Wessely, 1987).

Sirois (1974) reviewed the literature on 70 MPI outbreaks that had occurred worldwide between 1872 and 1972 and classified the outbreaks into 5 different types based on the settings, pattern of onset, and contagion of the illness behaviors (p. 17): 1) "Sudden onset explosive type": symptoms appear rapidly and many people are affected at once. This type of outbreak is short-lived and may occur in any setting and often involves a small group of young people. Triggering factors are difficult to trace but "it appears to be a tension discharge phenomenon in a closed group." 2) "Explosive with an identifiable prodromal stage" is a variant of the explosive type in that isolated cases are first detected, and there is gradual build-up to explosive outbreak, which may last for about a couple of weeks. 3) "Cumulative outbreak" involves fewer than 10 people who are usually affected in "chain reaction" fashion over a period of a month. This type of outbreak often transpires in closed institutional settings. 4) In "rebound outbreaks" a few people get affected rapidly, followed in a few days by a second wave of cases. "The rebound phenomenon often appears when the group is reunited (i.e., when workers gather in a cafeteria for lunch or when students come back to the school after vacation or a break)." This type of

outbreak lasts for 1-2 months and over 30 people are affected. 5) "Diffuse outbreaks" are not restricted to any specific group. Diffuse MPI outbreaks may involve communities, rural areas, towns, and usually, a large number of persons of both sexes and of all ages are affected (cf. Bartholomew, 1993, 2000). Boss (1997) noted that this classification of the outbreaks in five types was "subjective" (p. 238) and in his review reported an increase in the explosive type of outbreaks with shorter duration (i.e., less than three days) in the MPI episodes occurred in the period of 1973 to 1993. Bartholomew (1993, 2000), however, cautioned against the use of the five-type classification, especially the "diffuse outbreak" type. He argued, "The use of this paradigm has resulted in a variety of diverse and seemingly unrelated social phenomena as fads, Nazism, cargo cults and collective flying saucer sightings being placed under a unitary diagnostic rubric" (Bartholomew, 1993, p. 178). Further, Bartholomew (1993, 2000) urged that " collective" or "mass delusions" – "the spontaneous, temporary spread of false beliefs in a given population" that do not involve illness symptoms – and "epidemic hysteria" – "the pathologic spread of conversion symptoms" or illness symptoms – are two separate problems and need to be distinguished in diagnosis (Bartholomew, 2000, p. 206; also see: Wessely, 1987). Separating "mass delusions" or any "crowd" behavior (Le Bon, 1897) from MPI is consistent with Wessely (1987) suggestion that only "collective behavior" (p. 109) with certain characteristics should be regarded as MPI:

"First, it is an outbreak of abnormal illness behavior that cannot be explained by physical disease. Secondly, it affects people who would not normally behave in this fashion. Thirdly, it excludes symptoms deliberately provoked in groups gathered for that purpose, as occurs in many charismatic sects... Fourthly, it excludes collective manifestations used to obtain a state of satisfaction unavailable singly, such as fads,

crazes, and riots. Finally, the link between the participants must not be coincidental" (p. 110).

Based on the cluster of symptoms (e.g., acute anxiety symptoms vs. alteration in motor function), level of pre-existing emotional tension/stress, duration of outbreaks, pattern of spread, and the age-group of affected individuals, Wessely (1987, p. 109) proposed a division of MPI episodes into two "syndromes": "mass anxiety hysteria" and "mass motor hysteria" (cf. Ali-Gombe, Guthrie, & McDermott, 1996).

The anxiety-type MPI is triggered by a perceived or real threat – for example, a foul or strange odor that is interpreted as coming from a poisonous gas leak or terrorist attack. This type of MPI involves acute anxiety and related somatic symptoms, such as headache, abdominal pain, chest tightness, palpitation, dizziness, fainting, and shortness of breath. Anxiety-type MPI occurs mainly in schoolchildren (under 18 years of age), outbreaks are usually short-lived, and any number of people in the vicinity of the perceived threat may be affected. However, the credibility of the presumed cause given by local authorities or media can prolong the outbreak (Small & Borus, 1987; John Waller, 2009b). In anxiety-type outbreaks, prior emotional tension/stress may be absent and the contagion is by "line of sight" so that "those who do not witness the outbreak are never involved" Wessely (1987, p. 116). Often, the symptoms are alleviated by the elimination of the alleged threat. Wessely (1987, p. 116) noted that "mass anxiety hysteria" is equivalent to the "explosive type" outbreak identified by Sirois (1974) and stressed that "[t]hese episodes are always of a benign nature, lasting no more than a few hours. Occasionally, further episodes may occur in a similar explosive fashion within a few days, but only if the group recongregates."

The motor-type of MPI, in contrast, tends to occur among close-knit groups exposed to longstanding psychosocial stressors. Dissociative states, conversion symptoms, and motor disturbances are among the chief manifestations. Although the index case in motor-type MPI may also be triggered by a perceived or real threat, the concurrent symptoms spread gradually over weeks or months to subsequent cases. Unlike anxiety-type MPI, contagion in the motor-type MPI occurs primarily through the "interaction" between the index case and the rest of the group (Wessely, 1987, p. 116). People of any age group may be affected in motor-type epidemics and the symptoms may persist for days, months, or years, even after the elimination of the perceived threat (also see: Bartholomew, 2014; Bartholomew & Wessely, 2002; John Waller, 2009b) [See Chapter 4 of this thesis for examples of anxiety-type and motor-type MPI outbreaks].

Various authors (e.g., Bartholomew, 2014; Bartholomew & Muniratnam, 2011; Bartholomew & Sirois, 2000; Bartholomew & Wessely, 2002; John Waller, 2009b; Weir, 2005) have followed Wessely's distinction and have noted that before the 20th century MPI outbreaks were predominantly motor-type "incubated by exposure to long-standing religious, academic or workplace discipline" (Weir, 2005, p. 36). Since the 20th century, MPI outbreaks in Western countries have been mainly anxiety-type, triggered by real or perceived threats of gas poisioning, contaminated food, water or airl while motor-type MPI outbreaks are more common in non-Western countries, occuring amid pre-existing emotional tension or stress caused by "extreme capitalist, educational, and religious discipline" (Bartholomew & Muniratnam, 2011, p. 237). However, recent reports of MPI outbreaks in United States (Bartholomew et al., 2012; Cook, 2013; McVige, Fritz, & Mechtler, 2012; Novella, 2016), Mexico (Nickell, 2012) and various countries in Europe (French Institute for Public Health Surveillance, 2007; Perrett & Lilling,

2007), show that motor-type MPI episodes are not exclusive to non-western countries.

Ali-Gombe and colleagues (1996) have argued that it is not always possible to make a clear-cut division between motor-type and anxiety-type because some MPI episodes have mixed features. For example, in an episode of MPI in a school in Nigeria, they found that the major symptoms involved motor dysfunctions and no anxiety symptoms were evident in the affected children, and the onset of the outbreak could be traced back to an index case. All these features indicated a motor-type outbreak. However, the contagion of the illness behaviors occurred rapidly through witnessing or by sight, and the outbreak remitted quickly, which are said to characterize an anxiety-type MPI episode. Also, pre-existing emotional tension or stress is one of the key features of motor-type episodes, but Ali-Gombe and colleagues (1996) did not find any significant pre-existing tension in the school. Therefore, they concluded that while anxiety or motor symptoms may predominate in a given MPI episode, the other associated features overlap, weakening the argument that there are two separate syndromes (Ali-Gombe et al., 1996, p. 634). Moreover, a study of a MPI episode in an indigenous group conducted by Piñeros, Rosselli, and Calderon (1998) in Colombia, found that even the symptom presentation can be mixed with a "typical episode" involving: "hyper-ventilation, clear signs of anxiety, fainting, pseudoseizures, howling and stiffening of the body with back-arching" (Piñeros et al., 1998, p. 1426).

Various authors (e.g., Bartholomew, 2016; Bartholomew et al., 2012; Eaton, 1999; Pennebaker, 1982; Weir, 2005) have noted "the extraordinary diversity of MPI outbreaks, encompassing differing times, behaviors and cultures" Wessely (1987, p. 112). The triggering factors, illness behaviors and the explanations of MPI outbreaks are believed to reflect "the prevailing cultural, religious, and scientific beliefs held by the society" in which they occur (M. Colligan, Pennebaker, & Murphy, 1982, p. 2). Yet, the occurrence of an illness episode and the

pattern of the contagion exhibits common features (Boss, 1997; Chen, Yen, Lin, & Yang, 2003; M. Colligan et al., 1982). Wessely (2000, p. 129) noted, "In a previous era, spirits and demons oppressed us. Although they have been replaced by our contemporary concern about invisible viruses, chemicals, and toxins, the mechanisms of contagious fear remain the same." In this regard, researchers have identified the following eight descriptive features of MPI that are often used to diagnose illness epidemics as MPI: 1) lack of plausible pathogenic explanation for the presenting illness behaviors or symptoms; 2) benign morbidity; 3) rapid spread and rapid remission of symptoms; 4) preponderance of the illness in females (especially girls of preadolescent and adolescent age groups); 5) illness behaviors appear in a segregated group; 6) contagion of the illness behaviors through visual and/or auditory exposure; 7) the contagion of illness behaviors occur down the age-scale, beginning in older or higher status students; and 8) presence of stress preceded by an actual or rumored catastrophic traumatic event (see: Bartholomew & Sirois, 1996; Bartholomew & Wessely, 2002, 2007; Gamino et al., 1989; Selden, 1989; Sirois, 1999; Small, Propper, Randolph, & Eth, 1991). However, "there exists no typical diagnostic feature with exceptions found for all characteristics" (Balaratnasingam & Janca, 2006, p. 172; also see: Bartholomew, 1994; Weir, 2005).

In psychiatric nosologies, such as Diagnostic and Statistical Manual (i.e., DSM-IV), MPI is usually subsumed under "conversion disorder", which is a subcategory of "somatoform disorder" (American Psychiatric Association, 1994, p. 445), and is limited to mention as an epidemic form of conversion disorder. For example, in regard to MPI, only the following text is included in DSM-IV and DSM-IV-TR (American Psychiatric Association, 1994, 2000): "In 'epidemic hysteria,' shared symptoms develop in a circumscribed group of people following 'exposure' to a common precipitant. A diagnosis of Conversion Disorder should be made only if

the individual experiences clinically significant distress or impairment" (American Psychiatric Association, 1994, p. 454). There is no mention of MPI or "epidemic hysteria" in DSM-5 (American Psychiatric Association, 2013).

MPI is a global phenomenon with a history as old as humanity itself. MPI episodes "were described in antiquity, in the Middle Ages, and in succeeding centuries right up to the present" (Rosen, 1960, p. 201). For example, the "dancing mania", characterized by convulsions, twitching of limbs, "irresistible impulse to bound, to leap and to dance in circles for hours, days and even for weeks in some instances" (Madden, 1857, p. 399), is probably among one of the most popular historical examples of MPI in Medieval Europe (see: Bartholomew & Sirois, 2000; Hecker, 1846; Rosen, 1962; Sigerist, 1943; John Waller, 2009b; Wessely, 1987). Although historians have identified the records of episodes of dancing mania in Europe from 11th to 13th century (e.g., Hecker, 1846; Madden, 1857; Rosen, 1962; John Waller, 2009a), one of the earliest, well chronicled, major outbreak of dancing mania occurred in Germany in 1374 (Davidson, 1867; Hecker, 1846; Madden, 1857; Yandell, 1881) after which it spread all over Europe. Referring to this dancing epidemic, Hecker (1846) noted:

"So early as 1374 after the Black Death [a grave plague that started in 1330s and killed millions of people around the world], men and women who came out of Germany and assembled in the churches and on the streets; they formed circles hand in hand and appearing to have lost all control over their senses, continued dancing, regardless of the bystanders, for hours together, in wild delirium until at length they fell to the ground in a state of exhaustion" (p.87-88).

Dancing mania episodes continued for a few centuries in Europe, declined and then died away by the mid of 17th century (Davidson, 1867; Hecker, 1846; Madden, 1857; John Waller,

2009a). John Waller (2008) reported that after another major outbreak in Strasbourg, France in 1518 where as many as 400 people danced wildly for weeks, no more large outbreaks of dancing mania occurred in Europe, but instances involving small groups of people continued until mid 17th century (e.g., dancing mania comprising of three children from the same the family in 1551 in Anhalt, Germany) (Rosen, 1962). A variant of dancing mania, known as Tarantism, existed in Italy during 13th to 17th century (Bartholomew & Sirois, 2000; Gloyne, 1950; Rosen, 1962; Sigerist, 1943).

Nevertheless, the illness behavior phenomenon involving convulsions, twitching, shaking, trembling, screaming, fainting, and all the behaviors exhibited in the dancing mania Tarantism except an uncontrolled urge to dance, in a cluster of people continued to appear in Europe and other contexts in various forms and under different names (Bartholomew & Wessely, 2002; Rosen, 1960, 1962). For example, numerous outbreaks of MPI episodes involving convulsions, fainting, trance and possession states, numbness, outcries and various vulgar behaviors (i.e., using "foul language", "exposing genitalia", "rubbing private parts") while in a state of demonic possession, transpired in convents or nunneries in Europe (i.e., Scotland, France, New Zealand, Spain) from the 15th to 19th century (Bartholomew & Wessely, 2002, p. 300; also see: Yandell, 1881). As noted by Bartholomew and Hassall (2015), accounts of some of these epidemics in convents in Europe were so bizarre that they are difficult to believe today. For example, in 15th century France, a group of nuns exhibited bizarre fits and yelped like dogs. Likewise, in one French convent, the nuns meowed together every day at a specific time for several hours, while in 16th century Spain, the nuns in a church bleated like sheep, tore off their clothes and fell into convulsions, and so on (see: Bartholomew & Hassall, 2015; Bartholomew & Wessely, 2002; Hecker, 1846). "Epidemic convulsions" (also see: Rosen, 1960; Rosen, 1962;

Yandell, 1881, p. 339) were also observed in religious institutions and gatherings in the United States of America (USA), particularly in Appalachia, from the 1770s to the 1880s (Yandell, 1881). In some instances, as many as 20,000 people gathered for religious meetings (pilgrimage), and "thousands fell in convulsions to the ground" (Yandell, 1881, p. 342). Even children seven to 12 years of age were affected. Convulsion was only one among various forms of epidemics that occurred in religious contexts. As Yandell (1881, p. 348), a Professor of Surgery at the University of Louisville, Kentucky, noted, "[t]hese nervous disorders assumed many other grotesque forms...The subjects often rolled over and over on the ground, or ran violently until worn-out with the exertion". Hysterical laughter was another form in which many people at the congregation would laugh at once in the middle of the sermon (also see: Rosen, 1960, 1962).

Isolated MPI incidents in schools and in factories were recorded from the 16th to the 19th century, perhaps one of the first recorded MPI outbreak in school dates back to 1566 in a Catholic orphanage school in Amsterdam, Holland (Bartholomew, 2014; Bartholomew & Rickard, 2014). One of the first episodes in a factory, occurred in England at a Lancashire cotton mill in 1787 (Bartholomew, 2001; Bartholomew & Hassall, 2015). Toward the end of 19th century and early the 20th century, MPI episodes in schools and in work settings became more common worldwide (see: Bartholomew, 1993; Bartholomew & Hassall, 2015; Bartholomew & Rickard, 2014; Bartholomew & Sirois, 2000; Boss, 1997; Sirois, 1974). Reviews of the literature conducted by several authors (e.g., Bartholomew & Sirois, 1996, 2000; Boss, 1997; M. J. Colligan & Murphy, 1982; Sirois, 1974, 1999) show that in the 20th century MPI occurred mostly in close-knit group settings such as schools and factories or work settings, and occasionally in communities. Schools are the most common site of occurrence of MPI worldwide.

As reported in the scientific journals and online media, hundreds of MPI outbreaks have occurred in Asia (i.e., Malaysia, China, Bangladesh, India, Nepal, Cambodia, Afghanistan, Sri Lanka, Iran, Vietnam, Brunei, Lebanon), Africa (i.e., Ghana, Congo, Nigeria, Uganda, Kingdom of Lesotho, Ethiopia, Namibia, Tanzania, Angola, South Africa), Europe (i.e., England, France, Denmark), Americas (i.e., United States, Mexico, Canada, Peru, Colombia, Jamaica, Nicaragua), in schools, and in work settings in the last two decades of 21st century. A few MPI episodes have been reported in towns/communities in Lebanon (Karam & Khattar, 2007), Iran (Khalilzadeh & Anousheh, 2002), Nepal (Sapkota et al., 2014) and Nicaragua (Wedel, 2012), at an airport in Australia (Bartholomew, 2005), on a bus in Canada (Bartholomew & Wessely, 2007), and at a hospital in Denmark (Jacobsen & Ebbehøj, 2016). A number of episodes have been reported in mass vaccination settings (e.g., Bernard, Cooper Robbins, McCaffery, Scott, & Skinner, 2011; Clements, 2003; Huang, Hsu, Lee, & Chuang, 2010; Khiem et al., 2003; Yang, Kim, Lee, & Park, 2017), which has led some authors (e.g., Loharikar et al., 2017; Mallick, 2009) to identify MPI as a potential threat to mass immunization programs. There are media reports of MPI incidents in schools and work settings in several countries (i.e., Nepal, Malaysia, Peru, Namibia, Bangladesh, Namibia, India) as recently as 2016 and 2017 (see: Appendix 2 for the list of selected online and print media reports of MPI outbreaks in various countries after 2000).

1.3 Epidemiology

The global frequency of occurrence of MPI outbreaks is unknown (Page et al., 2010; Yasamy, Bahramnezhad, & Ziaaddini, 1999). This is maybe partly due to difficulties in diagnosing an outbreak because the diagnosis of MPI episodes usually is made by exclusion – after ruling out all possible medical causes (Balaratnasingam & Janca, 2006). Sirois (1975)

surveyed approximately 1900 schools during 1973 and estimated that MPI outbreaks occur in approximately 1/1000 schools per year in Quebec, Canada. A review of six MPI outbreaks in schools in various countries that occurred during the period of 1966 to 1986 by Arcidiacono and colleagues (1990) reported that the proportion of people affected to the people exposed or at risk was 6% - 48% (Arcidiacono et al., 1990).

Sirois (1974) conducted one of the first comprehensive reviews of MPI outbreaks worldwide. He identified 78 outbreaks that had occurred from 1872 to 1972 in various cultures and settings. Eight of the reports were not accessible. Of 70 outbreaks he reviewed, 48.6% occurred in schools, followed by 24.3% of occurrences in towns and villages, 11.4% transpired in factories, and the remaining 15.7% of the outbreaks occurred in institutions, hospitals, waiting queue, a family, military setting and unknown settings. Thirty-one percent of the outbreaks involved fewer than 10 people, about 36% involved between 10 and 30 people, and 27% involved more than 30 people, while in about 6% of outbreaks the number of affected people were not reported. The largest outbreak involved approximately 200 people. In 83% of outbreaks, only women were involved and in 4%, only men. Similarly, Boss (1997) reviewed 70 incidents of MPI reported in the English-language journals worldwide during the 21 year span from 1973-1993 and found that 50% of the reported outbreaks occurred in the schools, 10% of incidents were in towns and village, 29% occurred in factories, and 4% in institutions and 3% in other settings (i.e., train station, birthday party).

There have been apparent changes in the characteristics and distribution of MPI outbreaks as well as the people affected in these outbreaks from the first review period (i.e., 1872 – 1972) to the second period (i.e., 1973 – 1993). Clearly, there has been an increase in the numbers of outbreaks reported in the journals from first review to the second. In the review by

Sirois (1974), the outbreaks involved fewer people for longer periods of time, compared to the later review by Boss (1997). Over the two review periods, outbreaks in towns decreased from 24% to 10%, and occurrences in factories increased from 11% to 29%. Of course, these differences may reflect changes in reporting. In particular, the increase in number of outbreaks in factories could just be a reflection of an increase in the reporting of the outbreaks as most of the reports were from Western settings (see: M. J. Colligan & Murphy, 1982). In the first period, only women were affected in 83% of the outbreaks, whereas in the second period, 70% of the incidents involved both men and women. Likewise, there has been a marked change in the illness behaviors and symptoms over time from pseudoneurologial symptoms like convulsions, abnormal movements, fainting, globus (lump in one's throat), cough, laryngismus, paresthesia (tingling or numbing sensation), anesthesia, and tremor to more autonomic symptoms including nausea, vomiting, dizziness, lightheadedness, abdominal distress, weakness, fatigue, fainting, hyperventilation (Boss, 1997; Sirois, 1974). Schools have remained the most common setting for MPI, accounting for about 50% of outbreaks, and females, especially adolescents (i.e., age < 20), were the majority of the affected in both periods.

In the last two decades, a large number of MPI outbreaks have been reported on the online media from various countries but only a few research reports have been published in the international journals. Thus, the review of literature published in scientific journals may not accurately represent the actual magnitude of the problem of MPI worldwide.

Recently, Page and colleagues (2010) reviewed the UK health records of "chemical incidents" defined as 'an acute event in which there is, or could be exposure of the public to chemical substances which cause, or have the potential to cause ill health'(p. 744) to measure the frequency of episodes of MPI in the reported chemical incidents in England. During a period

of about 16 months (January 2007 through April 2008) a total of 965 such incidents were recorded. Of 747 incidents meeting the eligibility criteria, 280 were randomly selected for the study. About 7% of the 280 incidents were determined to be MPI episodes and the complaint of odor was one of the robust predictors of MPI. MPI occurred mainly in schools and healthcare facilities. Unfortunately, other details were not reported in this interesting study.

Cheng and colleagues (2016) conducted a meta-analysis of reports of MPI outbreaks that occurred in schools in China from 2000 through 2013. They included 95 studies in the review (number of children included in the identified studies = 118,939). The affected children were 6-9 years of age. The pooled attack rate was 14.6% and girls were about three times more likely than boys to be affected in the outbreaks. The findings of this study are consistent with previous reviews in China. For example, Ling and colleagues (2014) reviewed the literature on MPI outbreaks that had occurred in schools in China between 1991 and 2010. They identified 107 such outbreaks and reported that the affected were mainly adolescent females from rural areas of the country.

Sapkota and Kirmayer (in preparation) conducted an archival study of MPI outbreaks in schools and in communities in Nepal. Data were gathered mainly from major national-level daily newspaper archives and from the records collected by the NGOs working in the field of psychosocial and mental health care in Nepal. When there was limited descriptive information available for the identified outbreak, the counsellor, who was responsible for preparing the report for the NGO, or the news reporter, or the headmaster of the affected school was contacted by telephone to obtain more details. The data were collected from the outbreaks that had occurred within last two decades (1997 through 2016). The study identified a total of 150 distinct MPI outbreaks (see: Figure 1). The graph shows that there has been a steady increase in the number of

outbreaks since 2007 except for 2011 and 2012; 56 outbreaks were reported in between 2015 and 2016. Four outbreaks occurred in different communities of three districts, while all other outbreaks transpired in the schools. MPI outbreaks were reported from 42 out of 75 districts in the country. A total of 209 people were affected in the community outbreaks of whom 28% were male. The age of the affected in the community outbreaks ranged from 7 to 50 years. MPI outbreaks occurred in 130 schools and were reported mainly from public schools in rural areas of the country. Only three outbreaks were reported from private schools in rural districts and one outbreak was reported from a public school in Kathmandu city. A total of 2160 children, 6 to 19 years of age were affected in the school outbreaks. Overall only 4% of the affected were boys and in 65% of the outbreaks only females were affected. (In five of the outbreaks that occurred prior to 2007 sex and age-related data were not available).

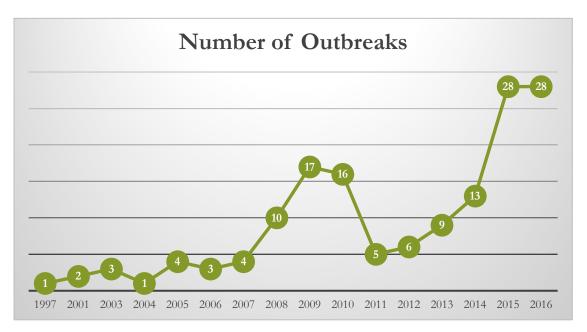


Figure 1: Frequency of MPI outbreaks in schools and communities in Nepal by year

Women, especially adolescents are among the majority of the affected in most studies of MP, with rare exceptions; (e.g., Boss, 1997; Sirois, 1974; Struewing & Gray, 1990), particular in situations where the nature of the MPI is gender-specific. For example koro-type epidemics (a condition characterized by a perceived shrinkage of the genitals) predominantly affect males for obvious reasons (Tseng, Kan-Ming, Hsu, Li-Shuen, & Li-Wah, 1988), The preponderance of women has been among the most consistent features of MPI throughout its history (see: Q. Cheng et al., 2016; Ling & Xu, 2014; McGrath, 1982; Micale, 2008; Sapkota & Kirmayer, in preparation). However, the reasons for this gender difference are still "a mystery" (Micale, 2008, p. 66) although various hypothesis exist, including: biological (e.g. deficiencies in thiamine, tryptophan-niacin, calcium, and vitamins in women) (Kehoe & Giletti, 1981; cf. Raybeck, Shoobe, & Grauberger, 1989) or endocrine effects of puberty, and menarche (Klein, 1993; Sirois, 1997); social and cultural, e.g. oppression of women in male-dominated societies (Castillo, 1994; Chodoff, 1982; Lewis, 1966, 1971; Murphy, 1982; Rosenbaum, 2000); lack of opportunities for direct expression of distress (Kirmayer, 1994; Nichter, 1981); higher susceptibility of women to emotionality and sympathy (M. J. Colligan & Murphy, 1979, 1982; Davidson, 1867), somatization and conversion disorder (Merskey & Mai, 2005), and the influence of modeling (Y.-W. Cheng, Tzeng, Decety, Imada, & Hsieh, 2006; Lee & Tsai, 2010; Lorber, Mazzoni, & Kirsch, 2007).

In summary, despite a very long and colorful history, the global occurrence, and significant social and economic implications, MPI has remained underreported, under researched, and poorly understood (Balaratnasingam & Janca, 2006; Bartholomew, 2016; Bartholomew & Hassall, 2015; Boxer, 1985; Nemery, Fischler, Boogaerts, Lison, & Willems, 2002; Page et al., 2010; Sirois, 1999). There is no agreed-upon definition or standard

terminology (Bartholomew, 1990; Ding & Kanaan, 2017; Kirmayer & Santhanam, 2001) nor is there a widely accepted theory or explanation of mass psychogenic illness (Bartholomew, 1990, 1994; Bartholomew & Wessely, 2002; Karam & Khattar, 2007; Sirois, 1999; Van Ommeren et al., 2001). Possible causes and correlates of these epidemics are not well understood and have not been widely studied (Balaratnasingam & Janca, 2006; Bartholomew & Rickard, 2014; Bartholomew & Sirois, 1996; Bartholomew & Wessely, 2002; Boss, 1997; Cohan, 2010; Sirois, 1974, 1982; Wong, Kwong, Tam, & Tsoi, 1982). With a handful of exceptions (e.g., Cole et al., 1990; House & Holness, 1997; Small et al., 1991; Tam, Tsoi, Kwong, & Wong, 1982; Van Ommeren et al., 2001; Wong et al., 1982), the MPI literature is limited mainly to descriptive case reports (Bartholomew, 1990, 1994; M. J. Colligan & Murphy, 1982; Page et al., 2010; Sirois, 1999; Stolley, 2005). And, as noted by Hefez (1985, p. 833), the central focus of most of these reports is on disproving the "underlying organic etiology" rather than identifying and explaining the "nature of the psychosocial processes involved." It is disappointing to note that although there has been an increase in the reporting of MPI episodes in the scientific literature in recent years (see: Boss, 1997; Sirois, 1974, 1999), the majority of the reports still are descriptive and there has even been a decrease in the number of controlled studies in two decades of the current century compared to the last quarter of the 20th century (Sapkota & Kirmayer, in preparation).

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Introduction to Chapter Two

The first study in this thesis examined the correlates of mass psychogenic illness (MPI) among adults during an outbreak in a single village. While MPI is a common occurrence in schools in Nepal, a few outbreaks have been reported among mainly adult women in rural communities. Three studies were reported in scientific journals (e.g., van Ommeren et al., 2001; Shakya, 2005; Sharma et al., 2010) prior to our study and all these studies were conducted with adolescents. Perhaps because of the use of different methods and measures, the findings are not consistent. For example, in a case-control study, Van Ommeren et al. (2001), identified trauma, early loss and recent loss as predictors of MPI (reported as "medically unexplained epidemic illness" in this study) in a Bhutanese refugee. Shakya (2005) found that low socioeconomic status was linked to dissociative trance behavior among girls affected in the MPI outbreak (reported as "epidemic hysteria" in this study) but did not find evidence that psychological distress had "triggered" the behavior in most cases. The study by Sharma et al. (2010) found associations between low academic performance, exposure to violence, mental illness (including anxiety and depression) and susceptibility to MPI (reported as mass hysteria in this study) in a school in a village in Nepal. It is unclear to what extent the factors identified in studies of adolescents apply to adults affected by MPI.

The opportunity to examine MPI in an adult population arose when the Center for Victims of Torture (CVICT), Nepal, an NGO working in psychosocial rehabilitation of torture survivors and in other community based psychosocial and mental health intervention programs, received a request from a community-based organization for help in managing an outbreak of spirit possession in a rural community in Sindhuplachowk district. The author worked with CVICT in the past and maintained collaboration with the organization. The first study aimed to

understand possible causes of the outbreak of spirit possession ("chhopne" in Nepali) and to help the community to control it. We conducted a mixed-methods case-control study in three stages. First, a pilot study consisting of informal interviews with possessed individuals, traditional healers, observations of the possession spells, and video recording of possession events was conducted to assess the sociocultural context of the *chhopne* outbreak. Second, a case-control study compared the prevalence of symptoms of common mental disorders and impairment in day-to-day functioning, among women who had experienced possession in the MPI outbreak and a sample of those who had not experienced possession. Finally, we conducted a follow-up study with focus group discussions and in-depth interviews of a sample of affected and non-affected men and women as well as the family members of the affected to assess perceived social support, coping strategies, prior exposure to trauma. The details of this study are reported in Chapter Two.

Note: A version of this study was published as: Sapkota, R. P., Gurung, D., Neupane, D., Shah, S. K., Kienzler, H., & Kirmayer, L. J. (2014). A village possessed by "witches": A mixed-methods case—Control study of possession and common mental disorders in rural Nepal. *Culture, Medicine, and Psychiatry*, 38(4), 642-668.

Chapter 2: Mass Psychogenic Illness in a Community: A Mixed Methods Case Study

Abstract

Background: In Nepal, spirit possession is a common phenomenon occurring both in individuals and in groups. *Objectives*: To identify the cultural contexts and psychosocial correlates of spirit possession, we conducted a mixed-method study in a village in central Nepal experiencing a cluster of spirit possession events. Methods: The study was carried out in three stages: (1) a pilot study consisting of informal interviews with possessed individuals, observations of the possession spells, and video recording of possession events; (2) a casecontrol study comparing the prevalence of symptoms of common mental disorders in women who had and had not experienced possession; and (3) a follow-up study with focus group discussions and in-depth interviews with possessed and non-possessed men and women, and key informants. Results: Quantitative results indicated that possessed women reported higher rates of traumatic events and higher levels of symptoms of mental disorder compared to non-possessed women (Anxiety 68% vs. 18%, Depression 41% vs. 19%, and PTSD 27% vs. 0%). However, qualitative interviews with possessed individuals, family members, and traditional healers indicated that they did not associate possession states with mental illness. Spirit possession was viewed as an affliction that provided a unique mode of communication between humans and spirits. As such, it functioned as an idiom of distress that allowed individuals to express suffering related to mental illness, sociopolitical violence, traumatic events, and the oppression of women. Conclusion: The study results clearly indicate that spirit possession is a multi-dimensional phenomenon that cannot be mapped onto any single psychiatric or psychological diagnostic category or construct. Clinical and public health efforts to address spirit possession must take the

socio-cultural context and systemic dynamics into account to avoid creating iatrogenic illness, undermining coping strategies, and exacerbating underlying social problems.

2.1 Introduction

Spirit possession is a common phenomenon in many developing countries both as a part of religious and healing rituals and as a form of affliction. In the recent literature, possession has usually been described as a socio-culturally shaped dissociative phenomenon (Chaturvedi, et al., 2010; Somasundaram, et al., 2008). Dissociation may involve a normal alteration in consciousness such as absorption or daydreaming, or a pathological division in identity or consciousness (van der Hart and Dorahy, 2009). Similarly, possession is often characterized as either normal or pathological depending on whether or not it conforms to social norms and expectations and is deliberately sought or occurs unintentionally. Possession that is deliberately sought as a part of cultural or religious rituals or in traditional healing (e.g. among shamans or mediums) may be viewed as desirable, while it may be perceived as pathological if it occurs outside the ritual context, is unintended, and is associated with distress and impairment in daily functioning (Van Duijl, et al., 2010; Cardeña, et al., 2009).

In Western psychiatry, unintended spirit possession has been regarded as evidence of psychopathology (Cardeña, et al., 2009) and has been associated with traumatic experiences (Seligman and Kirmayer, 2008; see Giesbrecht, et al., 2008; Kirmayer, 2011 for alternative views). DSM-5 identifies spirit possession as a possible symptom of dissociative identity disorder (American Psychiatric Association, 2013). In many cultural settings, however, even unintended possession is not viewed as inherently pathological and may be better understood as a spiritual affliction. Like other afflictions, spirit possession may also function as a cultural idiom

of distress, providing individuals with a means to express distress in contexts where more direct expression is not possible or may have negative effects (de Jong and Reis, 2010; Van Duijl, et al., 2010; Somasundaram, et al., 2008; Halliburton, 2005; Gaw, et al., 1998; Antez, 1992; Nichter, 1981, 2010; Obeyesekere, 1970). In many settings, spirit possession afflicts women more than men, and may allow marginalized women to gain agency and power (Gellner, 2001, 1994; Boddy, 1994; Castillo, 1994b; Fisher, 1989; Jones, 1976b; Lewis, 1966).

It remains unclear when or to what extent spirit possession can be viewed as an index of underlying psychological distress or social problems. While a number of authors have observed a relationship between psychopathology and possession (Seligman, 2005; Castillo, 1994a; Ward, 1980; Obeyesekere, 1970), very few studies have reported actual rates or levels of psychopathology among possessed individuals. In a cross-sectional study in Sri Lanka, Somasundaram and colleagues (2008) compared 90 individuals with possession from three different groups: psychiatric inpatients (n=30); general medical outpatients (n=30); and members of a community group known to have frequent possession states (n=30). Among the group of psychiatric patients with possession symptoms, 73% were diagnosed with schizophrenia, 10% with dissociative disorder, 13% with somatoform disorder and 3% with affective disorders. Common mental disorders were found in 40% of the possessed general medical outpatients, and 20% of the possessed individuals belonging to the community group. Similarly, in an epidemiological study of youths and young adults (n=1113) aged between 12 and 25 years in war-affected regions of Northern Uganda, Neuner and colleagues (2012) divided the sample into 'High' and 'Low' groups based on the frequencies of spirit possession related symptoms reported in a locally constructed 5-item scale. They found that spirit possession was significantly associated with Posttraumatic Stress Disorder (PTSD) and depression; 9.8% of low spirit

possession group and 44.5% of the high spirit possession group met criteria for PTSD. However, these studies were not well-designed to establish a clear relationship between spirit possession and psychopathology; the co-occurrence of possession and mental disorders reflects varying base rates and any nonspecific measure of distress (including possession) will be associated with higher rates of common mental disorder.

Nepal provides an interesting context for the study of spirit possession, because possession phenomena are relatively common and occur in several different forms. However, most studies of spirit possession in Nepal have involved ethnographic accounts in the context of specific traditional healing practices such as shamanism and spirit mediumship (e.g., Sidky, 2009; Gellner, 1994; Maskarinec, 1992; Fisher, 1989; Hitchcock and Jones, 1976; Hitchcock, 1967). Accordingly, the present study examined a cluster of possession events in one village and aimed to 1) to explore the association between spirit possession and common mental disorders; and 2) to investigate the relationship between sprit possession and psychosocial factors including traumatic experiences, coping, perceived social support, and impairment in functioning.

2.2 Spirit Possession in Nepal

In rural Nepal, spirit possession is a frequent event and numerous individual cases have been reported in the local and national media. Incidents of spirit possession affecting clusters of individuals sometimes referred to as "mass hysteria" or "mass psychogenic illness", often occur among groups of schoolchildren and women. However, health and mental health professionals have largely ignored the phenomenon, perhaps because possession is generally not perceived as a mental health problem or as a manifestation of underlying distress or mental illness, but rather as

emanating from "social malpractices, individual misfortune, or the capriciousness of spirits" (Fisher, 1989:10; Jones, 1976a; Winkler, 1976; Reinhard, 1976).

Spirit possession occurs in the context of particular cultural ontologies. In Nepal, spirits are believed to be omnipresent, found in all living beings (humans, animals, trees etc.) as well as non-living things (mountains, streams, villages, etc.), and there is a strong conviction that spirits can migrate from animate beings to inanimate objects and vice versa (Subba, 2007; Reinhard, 1976). Spirits are worshiped to insure personal, social and spiritual wellbeing and to prevent negative influences, particularly by evil or upset spirits (Subba, 2007; Maskarinec, 1992). Spirits can cause physical illness (rog), madness (pagalpan), and other misfortunes (dokh) (Maskarinec, 1992). While illness or unusual behaviors may be the result of uncontrolled spirit possession, in certain healing practices, the cure may involve controlled spirit possession, which represents an altered relationship with the spirit by the individual host or the surrounding community (Jones, 1976a). It is commonly held that spirits can punish particular individuals because of misdeeds in a past life, the misdeeds of other family members, a curse directed by someone at the afflicted person, or simply because the person was unlucky enough to have "crossed the spirit's path." In these instances, the spirits use the person's body as a vehicle to convey their reasons for being upset and to hint at the actions needed to appease them in order to resolve the possession (Van Ommeren, et al., 2001). Especially in rural Nepal, everyday life is shaped by beliefs in spirits and their power to influence health, illness, wealth, fortune, and wellbeing (Fisher, 1989; Jones, 1976a).

In Nepali, the terms we gloss as "spirit" include $\bar{a}tma$ as well as as $b\bar{a}yu$ or $l\bar{a}go$ (see Kohrt and Harper, 2008; Subba, 2007). Similarly, there is no single word or phrase for "spirit possession." The words most often used refer to particular possessing agents and are followed by

the verbs *chadne* (to ride, to mount, to take over control) (Winkler, 1976) or *utrine* (to manifest itself through the possessed person, to become visible, to come down) (Gray, 1987; Gaborieau, 1976). For example, if a person is possessed by the spirit of god (*deuta/devata ko ātma*), "possession" is referred to as *deuta/devata chadeko* (taken over by god) or *deuta utreko* (god manifesting through that person). The most common word for experiencing possession is *chhopne* (to catch, to get hold of, to cover by someone or something). *Chhopne* manifests when the person goes into trance or faints that is, becomes partially or fully unconscious. The Nepali terminology and metaphors used to describe *chhopne* imply that: an external agent (natural or supernatural) is involved; the external agent takes control of the person; the person exhibits or experiences trance-like states or fainting spells; and the possessed person is not fully aware or in control of his behavior during the possession event.

Ethnographers have distinguished three different types of spirit possession in Nepal: 1) intentional self-induced possession sought by the person for a particular purpose; 2) intentional possession induced by someone else for a reason; and 3) unintentional and involuntary possession (Gellner, 2001; Maskarinec, 1992; Fisher, 1989; Gray, 1987; Hitchcock, 1976; Paul, 1976). The first type of possession has been referred to as "non-pathological" or, more recently, "executive" in the anthropological literature (Cohen, 2008; Cohen and Barrett, 2008) and involves the intentional or purposeful calling of a benevolent spirit such as the spirit of god, goddess, powerful deities, powerful healers, gurus, or saints. The called spirit is invited to take over the body of the spirit medium, healer or supplicant for a designated period of time to serve a purpose, which may include communicating with the spirit about the cause of an illness or affliction and possible treatment strategies. Yogis, tantriks, shamans, and mediums mostly practice this kind of possession (Jones, 1976b; Hitchcock, 1967; Reinhard, 1976, Sidky, 2009).

The second type of possession, which is also intentional in the sense that it is initiated by human agency, but which is experienced as involuntary by the afflicted individual, can manifest in two different forms. The first form involves possession that is induced and controlled by someone else, usually a healer or shaman (Gray, 1987; Winkler, 1976). For instance, during healing sessions, a healer may call the spirit of the person believed to be responsible for afflicting illness into his client's body whereupon the latter becomes possessed. The second form of possession occurs during hymn (*bhajan* or *kirtan*) ceremonies in religious settings in which hymn singers (*bhajan gaune*) intentionally call the spirit of a god or goddess to possess a participant in the ceremony who then enacts the text of the respective hymn. In this type of possession, the body is controlled by the spirit, which is in turn directed by the singers.

Finally, the third type of possession is unintentional in that it is not deliberately induced by anyone. Instead, it occurs spontaneously, when malevolent spirits of deceased relatives or ancestors (*pret ātma*), spirits of natural entities such as water, air, and land, or spirits sent by living persons such as a witch take control of the possessed person (Gellner, 2001,1994; Maskarinec, 1992; Fisher, 1989; Hitchcock, 1967). This type of possession is often referred as a pathological or pathogenic possession in the psychiatric literature.

2.2.1 Witches and possession

The belief in witches (sing. boksi; pl. boksiharu) is widespread in Nepal, especially among rural uneducated women and their families (Gellner, 2001, 1994) who may attribute misfortunes such as illness of humans (mostly women and children) and animals, as well as events like crop failure, to the misdeeds of witches (boksi lāgeko/boksi lāgera). Alleged boskiharu are generally believed to be old women, widows living on their own, childless women, or lower caste women, and, in times of family disputes, mothers- and daughters-in-law may

accuse each other of engaging in witchcraft. Women who are believed to be *boksiharu* face social exclusion and, at times, outright violence. In 2013, for example, news media reported that a 40-year-old woman accused of being a *boksi* was burnt alive (Snyder, 2013), while others were stripped naked and had their heads shaved and human excrement forced into their mouths (Kohler, 2013).

Boksiharu are believed to cause harm through the use of special mantras (boksi lagāune), by hitting someone with a magical arrow (bāna hānne), or through evil eye (ankhā lagāune). Other possible ways include bir gādne², a form of black magic, as well as the wakening or raising of malevolent spirits of deceased persons who died unnaturally or did not receive proper funeral rites (i.e., pret, pichās, bhut, kichkanni), graveyard spirits (masān), or forest spirits (ban jhānkri) (Subba 2007). Once awakened, these spirits are deemed to be under the control of boksiharu and directed to afflict and harm particular individuals. Such individuals may experience states of possession (chhopne) during healing sessions with traditional healers who call the spirit of the respective boksi into the body of the affected person or, more spontaneously, when the person passes by a holy place (e.g. a shrine) that agitates the spirit.

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² Bir gādne involves making dolls of cloth, inside which mantras are placed along with a personal item of the person about to be harmed (i.e., their hair, fingernails, or a piece of cloth used by women to control blood during menstruation). The dolls are then pierced with pins and, finally, buried in the ground (in Nepali this process is known as bir khelne).

2.3 Methods

2.3.1 Research Setting

The study was conducted in a village that belongs to the Sangachowk Village Development Committee (VDC) located in the Sindhupalchowk district of Nepal. The village is situated about 60 kilometers from Kathmandu, the capital city of Nepal and consists of about 200 households with a population of approximately 900, divided into the following caste groups: Giri (over 60%), Dalits (low caste, around 30%) and Brahmin (less than 10%). Nepali is the mother tongue shared by all these caste groups. Local infrastructure is limited: The village has two schools and there is a health post located 3 kilometers from the village providing basic primary care. Psychosocial and mental health services are non-existent in the village. The nearest center with mental health services is Dhulikhel Hospital, which is approximately 30 kilometers away. Unusual for this region, at the time of the study, there were also no traditional healers residing in the village. The basis for subsistence is mixed agriculture. As with many rural regions of Nepal, since the 1990s it has been mostly women who are engaged in farming, while young men increasingly work and live in the urban centers or abroad in order to contribute to household income (Seddon, et al., 2002; Thieme and Wyss, 2005). Men return periodically to visit their families or for special occasions but, except for elders, are not a regular presence in the village.

People in the village had seen incidents of spirit possession in the past. Documented cases include: a 40-year-old woman who suffered from possession for over 10 years; a married couple in their thirties who were possessed in 2008; and a 45-year-old woman who was affected in 2009. While spirit possession occurred sporadically in the past, the number of affected individuals increased significantly in 2009 when spirits of *boksiharu* possessed 26 women and 4 men in rapid succession. This study aimed to investigate the characteristics of individuals

suffering from possession and explore potential underlying reasons for these incidents through a mixed-methods approach using both ethnographic and survey methods.

2.3.2 Sample and Methodology

Data collection was undertaken from 19/12/2010 to 26/03/2011 in three stages: In the first stage, a multi-disciplinary team consisting of a psychologist (RPS) and two social workers (DG, DN) trained in psychosocial counseling conducted a pilot study in the village. This included preparing a general description of the village, informal interviews with possessed people, ethnographic observation and video recording of possession episodes.

In the second stage, a case-control study was carried out comparing the prevalence of symptoms of common mental disorders among women who had and had not experienced possession. With the help of four key informants (two school teachers, one NGO worker, and one Hindu priest), a total of 38 women, including 22 possessed (cases) and 16 non-possessed (controls) were identified for the study. Women with at least one episode of *chhopne* were included in the possessed group while women with no such experiences were part of the control group. The control group consisted of mostly friends and neighbors of the affected women, had comparable demographics (age, sex, caste/ethnicity, literacy, marital status and self-reported socio-economic status), and had similar exposure to *chhopne* but had never experienced it themselves. Excluded were women who reportedly were afflicted by a *boksi* but had not experienced *chhopne* as well as affected male villagers (n=4) because two were children (questionnaires used were designed and validated for use among adult populations) and the other two were not residing in the village while the study was conducted.

In the third and final stage of the study, a team comprising a psychologist, two medical doctors from Bir Hospital in Kathmandu, three social workers and a statistician (SS) conducted a multi-method follow-up study. The medical doctors performed physical examinations and collected data on physical illnesses among the women previously interviewed as part of the case-control study. The other team members conducted three separate focus group discussions with possessed women (n=13), non-possessed women (n=7), and both possessed and non-possessed men (n=13) as well as 7 individual interviews with key informants (two school teachers, an NGO worker, three family members of possessed and non-possessed women, and a Hindu priest). All three focus groups were conducted on the same day and were video recorded and transcribed for analysis.

2.3.3 Instruments and Measures

For each study participant, socio-demographic characteristics including age, education, caste/ethnicity, marital status, and occupation were recorded with a checklist. To assess common mental disorders, three standard self-report questionnaires were used: i) the Beck Anxiety Inventory (BAI; Beck and Steer, 1996), ii) the Beck Depression Inventory (BDI; Beck, Steer and Garbin, 1988), and iii) the Post Traumatic Stress Disorder Checklist-Civilian version (PCL-C) (Weathers, et al., 1994). The BAI and BDI are 21-item scales that are widely used to measure the severity of symptoms of generalized anxiety and depression, respectively. The PCL-C Nepali version includes two items that elicit traumatic experience and has 17 items that correspond to the symptom criteria for PTSD in the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV; American Psychiatric Association, 2000). All three instruments are available in Nepali and have been validated and employed in past research projects. The validated cut-off

points for caseness (defined as moderate severity) are BDI score \geq 20 for depression (sensitivity = 0.73 and specificity = 0.91) and BAI score \geq 17 for anxiety (sensitivity = 0.77 and specificity = 0.81) (Kohrt, et al., 2002; Kohrt, et al., 2003). The cut-off for PTSD caseness on the PCL-C is a total score \geq 50 (sensitivity = 0.80 and specificity = 0.80) (Thapa and Hauff, 2005).

Functional impairment was assessed with the locally developed Impairment in Daily Functioning (IDF) Scale (Luitel, et al., 2013). The IDF consists of 10-items rated on a 4-point scale, from 0 'not at all' to 3 'always', summed for a total score that ranges from 0 to 30. The scale assesses domains of individual, family, and community functioning with gender-specific items, and includes one open item asking, "What are the other activities/tasks that you found difficult to do in the past two weeks?" The internal reliability of all these instruments was excellent with Cronbach's $\alpha = 0.97$, 0.95, 0.95, and 0.92 for BDI, BAI, PCL-C, and IDF respectively.

For the qualitative data collection, separate semi-structured interview schedules and checklists for key informant interviews and focus groups were prepared based on the information from the pilot study and the literature review. These schedules elicited information on the experience of traumatic events, modes of coping with trauma, and social support along with general questions related to the local experiences and understanding of possession.

2.3.4 Data Analysis

Qualitative data obtained through observation, key informant interviews and focus groups were discussed among the researchers to identify themes and generate hypotheses for testing with quantitative data. Transcripts of the focus groups and key informant interviews were prepared immediately after the field visit. Thematic analysis of focus groups and key informant

interviews was performed according to the following process: 1) transcripts were read separately by two researchers; 2) themes were identified, compared and discussed among the researchers; and 3) information was summarized according to the relevant themes and categories (Braun and Clarke, 2006). Responses on coping, traumatic experiences, and perceived social support system were categorized for statistical analysis of frequencies.

The quantitative data were analyzed with descriptive and inferential statistics. Sociodemographic characteristics of the possessed and non-possessed groups were compared with chisquare tests for categorical variables and t-tests for interval variables. The relationship between
spirit possession and common mental disorder (psychopathology) was explored in two steps.

First, Odds Ratios (OR) were calculated to estimate how likely the possessed individuals were to
reach criteria for caseness of a common mental disorder (anxiety, depression or PTSD) compared
to the non-possessed individuals. Second, point biserial correlations were computed (because one
of the variables was categorical) to determine the strength of the relation between mental illness
and possession. Similarly, phi correlations were calculated when both the compared variables
were categorical. Since the data on functional impairment were positively skewed and Levene's
test for equality of variances was significant (p < .05), logarithmic transformation was performed
on this measurement (Tabachnick & Fidell, 2001; van Duijl, et al., 2010). The statistical analysis
was performed with SPSS 16 and Microsoft Excel software.

2.3.5 Ethical Considerations

The data were collected as part of a clinical consultation by the Centre for Victims of Torture (CVICT) Nepal. Consent for the study was obtained from the village leaders and schoolteachers after explaining the purpose of the study and informed verbal consent was

obtained from each research participant, including key informants and family members. Design of the study followed the Canadian Institutes of Health Research Guidelines for Health Research Involving Aboriginal People (CIHR, 2007). All data were treated with strict confidence. Information that would identify specific individuals was eliminated from the interview transcripts prior to analysis. The study results were later presented to study participants and village leaders. No financial support or compensations was given to the participants throughout the study. However, we provided psycho-education³, free physical health check-ups, basic medicines for pain and gastrointestinal disturbances, after each focus group. No funding or external support was received for the study.

2.4 Results

2.4.1 Case Study

The following case study illustrates the kind of spirit possession (*chhopne*) experienced due to the influence of witches (expressions used for this included *boksi lāgyo*, *chhāya lāgyo*, *masān lāgyo*, *bān jhankri lāgyo* or *boksile uthāyera lagaidiyeko*) and provides a description of common symptom manifestations, causal explanations, coping strategies, treatment experiences,

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³ At the end of each focus group, we presented the results of the quantitative study. We then explained to the participants that people could experience extreme distress (*pidā*) and suffering (*dukha*) due to work related issues, having to live without a husband or other male family members, financial problems, disputes in the family, etc. These difficulties could, in turn, lead to "heart-mind problems" (*maan ko pida/samasya huna sakchha*), which could be relieved through a supportive social environment and meaningful interactions with others. However, in the absence of such a supportive context, people may rely on other strategies to relieve or come to terms with their distress (*mānchhe le maan ko pidā kam garna anek upāye garchhan*) or, as previous studies have shown, experience *chhopne*. We then went on to clarify that *chhopne* is not necessarily a mental illness or sign of "hysteria" as health workers who had visited the village previously had suggested, but, rather a reaction to distressing life situations.

and impact of the experiences on social relations. It also outlines the chain of transmission from the index case to other members in the community.

Shakshi (name changed), a 21-year-old woman, lived with her husband's extended family while her husband lived and worked in Kathmandu. At the time of this study, Shakshi was pursuing her Bachelor's in Education at a local college. As a daughter-in-law, she also helped her family in the household, in the field, and with the cattle. After 7 month's pregnancy, she gave birth to her first child in a hospital in Kathmandu. The infant, however, died 5 days later and Shakshi returned to her village without her husband. On the thirteenth day of the death of her child, after performing a brief *puja* marking the end of the first phase of mourning, Shakshi was sitting in her room when she saw a woman draped in a white shawl outside the window. She first thought it was her husband's grandmother coming to tell her something, but she then realized its unlikelihood, given that her room was on the second story. She then started to tremble with fear and felt like she was suffocating. She started to scream, and finally fainted.

Following this initial episode, Shakshi began to have frequent fainting spells. She was taken to various hospitals in Kathmandu where she was provided with medications for "tension⁴". She took the prescribed medications for several days but stopped after finding it ineffective and threw both the medication and the prescription away. Deeming the medical interventions ineffective, her family supported her efforts to find help from traditional healers.

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⁴ Nowadays, the English term "tension" is used more commonly than the Nepali equivalent "tanāb"

The family noted that her spells escalated in frequency when she consulted the traditional healers, which they considered was caused by agitation of the spirits due to the healer's presence.

Within a few months, other people in the village began to have similar episodes of possession. Eventually, Shakshi's mother-in-law too started experiencing fainting spells, and on one occasion, her father-in-law felt a spirit trying to attack him, which he was able to fight off. Shakshi and her mother-in-law blamed the grandmother for inflicting these spells on them. Other women in the neighborhood affected by similar spells accused their own family members or neighbors of practicing witchcraft and inflicting harm on them. Ultimately, 30 people including two men and two schoolboys in the village were affected in this cluster.

There were no healers present in the village, and so to contain the problem and ensuing conflicts, traditional healers from neighboring villages were either consulted or brought into the village to exorcise the spirits. However, their rituals resulted in no relief and in some cases exacerbated the problem, increasing the frequency of spells and of aggressive behaviors during the spells. Even some of the healers were affected and refused to return to the village, claiming that the fight against so many powerful *boksiharu* was beyond their capacity. Meanwhile, some of the villagers took their affected family members to hospitals in Kathmandu, where various medical investigations were carried out. However, no physiological explanation was established and they were sent home with "tension reducing medicine," which invariably turned out to be ineffective.

When nothing seemed to help, a Tantric healer (*Tantrik*) from Kathmandu was invited to the village, who refuted the witchcraft explanation. Instead, he attributed the cause of the possession episodes to an angered clan deity and suggested that the villagers build a shrine and worship there daily in order to appease the deity. Following his advice, a shrine was built, where

the village women went in large numbers to worship. They then began to experience the possession spells while at the Shrine but stopped have episodes at home. Over a period of several months, many of the affected women recovered but new cases continued to emerge. When the research team visited for the first time, the village had been affected for over 6 months.

2.4.2 Quantitative Results

2.4.2.1 Sociodemographic characteristics

Table 1 summarizes the main demographic characteristics of possessed and non-possessed groups. All except one of the cases were women belonging to the Giri caste group, which is one of the higher caste groups, and most were literate. Reflecting successful matching of cases and controls, the possessed and non-possessed groups were comparable in all respects including age, caste/ethnicity, marital status, and literacy.

2.4.2.2 Psychopathology and Possession

Table 2 presents the scores of the possessed and non-possessed groups related to anxiety, depression and PTSD symptom scales, and the percentage reaching criteria for caseness (i.e. probable common mental disorder). Compared to the controls, the possessed group scored higher on all the symptom scales and a higher proportion met criteria for caseness. Among the possessed, the highest prevalence was for anxiety, followed by PTSD and depression. None of the controls scored equal to or above the cut-off point for PTSD. Table 2 also presents the odds ratios for anxiety and depression, which shows that the possessed group was about 9 times more likely to have anxiety (OR = 9.29[95% CI 1.99-43.44]); the odds ratio for depression was not

 Table 1: Sociodemographic characteristics of possessed and non-possessed groups.

Variable	Subcategory	Non				2		
		Possessed n %		possessed n %		χ^2	df	p
Gender	Female	22	57.89	16	42.11			
Caste/ethnicity	Giri	21	95.45	15	93.75	0.54	1	.82
	Dalit	1	4.55	1	6.25			
Religion	Hindu	22	57.89	16	42.11			
Marital status	Married	20	90.91	15	93.75	0.10	1	.75
	Unmarried	2	9.09	1	6.25			
Living with								
husband	Yes	9	40.91	6	37.50	0.19	2	.91
	No	11	50.00	9	56.25			
	Unmarried	2	9.09	1	6.25			
Education	Literate	19	86.36	13	81.25	0.18	1	.67
	Illiterate	3	13.64	3	18.75			
Level of								
education	Informal education	7	36.84	7	53.85	1.11	3	.77
	Primary level	6	31.60	3	23.10			
	High school Intermediate and	3	15.80	1	7.70			
	above	3	15.80	2	15.40			
Socio-economic								
status	Middle class	12	54.5	6	37.5	1.08	1	.29
	Lower class	10	45.5	10	62.5			
Family								
composition	Nuclear	8	38.10	10	62.5	2.11	1	.19
	Joint	13	61.90	6	37.5			
		Mean (SD)		Mean (SD)		<i>t</i> -test	df	p
Age	Mean (SD)	29.36 (10.14)		28.7 (6.89)		-0.46	34	.65

significant. Point biserial correlations conducted between the possessed and non-possessed group revealed moderate to strong associations with variables associated with mental illness: being

possessed was strongly associated with having anxiety (r_{pb} =0.55, p<.01) and PTSD (r_{pb} =0.51, p<.01) and moderately associated with having depression (r_{pb} =0.43, p<.01).

The mean score on the measure of functional impairment of the possessed group (8.64, SD=6.32) was also significantly higher than the mean score of the non-possessed group (3.06, SD=3.09; t (31) = 2.87, p< .01). However, there were no differences in the types of day-to-day tasks with both groups reporting difficulty in the following: fetching water, taking care of the family, looking after domestic animals, doing the household chores, and participating in social events/meetings. Impairment was strongly associated with symptoms of PTSD (r=.56 p<.01), anxiety (r=.85; p<.01) and depression (r=.59; p<.01).

Table 2: Comparison of symptoms of common mental disorders in possessed and non-possessed groups

Symptom scales*	Possessed (n = 22)		Non-possessed (n=16)			95% CI	
	Mean (SD)	%**	Mean (SD)	%**	OR	Lower	Upper
Anxiety (BAI) Depression	25.86(15.5)	68.2	9(8.05)	18.2	9.29	1.99	43.44
(BDI)	22.95(12.1)	40.9	11.94(11.3)	18.8	3.0	0.66	13.66
PCL	42.18(15.6)	27.3	26.31(9.96)	0			

^{*}BAI = Beck Anxiety Inventory; BDI = Beck Depression Inventory; PTSD = Posttraumatic Stress Disorder Symptom Checklist (Civilian Version)

^{**} Caseness based on cut-off scores: BAI ≥17; BDI ≥20; PCL≥50.

2.4.2.3 Traumatic events (dukhad ghatanā) and possession

In all, 71% of study participants reported having experienced traumatic events at least once in their lives. Although compared to the non-possessed group, (56%, n=9), a higher percentage (82%, n=18) of the possessed group had traumatic experiences, the difference was not statistically significant (χ^2 (1)=2.94, p < .09). The reported traumatic events occurred over a long-time span, from 23 years earlier to the previous year, with a mean of 6.74 years ago (SD=6.73). Traumatic experiences mentioned frequently by both groups included: husband's second marriage (n=3; in Nepal, though illegal, it is possible for men to marry again when being married previously but not divorced from their first wives); death in the family (n=10); and accidents and injuries of self or family members (n=4). Traumatic experiences specific to the possessed groups were: fear of own or family member's death (n=3); mistreatment in the family (n=3); possession/fainting experience (n=3); and witnessing someone die (n=1).

2.4.2.4 Perceived social support, coping and possession

The majority of the study participants (55%) reported that they had no social support in their village. There was no significant difference between groups on perceived social support, with 45% of the possessed and 56% of the non-possessed indicating the existence of social support for heart/mind problems (roughly equivalent to mental health concerns) (Kohrt and Harper, 2008). Sources of social support identified by participants included the health post, the medical shop, women groups, the temple, and TV or radio programs.

Figure 1 summarizes the coping strategies adopted by possessed and non-possessed women when dealing with day-to-day social and economic problems as well as mental distress.

The most common coping strategies referred to by the possessed group were talking to others,

followed by conducting or getting involved in spiritual activities, entertaining oneself (i.e. watch TV, listen to radio/music) and consulting traditional healers. The most common coping strategies for the non-possessed group included talking with others or keeping oneself busy, and maintaining self-control. Many of the strategies were similar in both groups; but staying alone was specific to the possessed group and seeking monetary support and self-control strategies were only used by the non-possessed group. This suggests that the coping strategies used by the non-possessed group were more instrumental or focused on problem resolution, whereas the strategies used by the possessed group were focused on emotional relief.

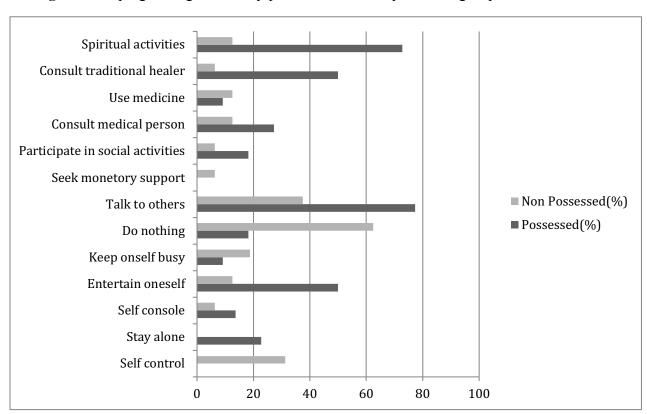


Figure 1: Coping strategies used by possessed and non-possessed groups

2.4.3 Qualitative Results

2.4.3.1 Major complaints and characteristics of the possessed women

The qualitative study results revealed different patterns of possession experience. As stated above, several women became possessed when they went to the shrine to provide offerings (Tika, flowers, and water). Once at the shrine, the women prayed, and some began trembling while others started screaming, babbling or chanting loudly. Still others started begging for forgiveness and after a few minutes collapsed to the ground where they lay silently for a brief time until they began moving their limbs or crawling and screaming or crying. While able to respond to questions in this state, they spoke and behaved as different persons since the possessing spirit controlled their voices and behaviors. When prompted, the possessed person provided information about the possessing spirit explaining who she was, where she lived, what she did, as well as what she wanted, and what she would take to leave the body. Some of the possessed women claimed that they entered a semi-conscious state and thus were aware of what was happening around them but unaware of their own actions, which were beyond their control. One focus group participant said, "I am aware of what people asked and what they said to me when I am possessed but I do not remember anything of what I did during the spell". However, others reported that they had no recollection of what was happening in and around them. One focus group participant put it this way, "I am not aware of what happens or what I do after I am possessed. Everything looks blue and black".

The most common physical and emotional symptoms reported by the women included weakness, lack of control over motor activities, getting angry at themselves, shivering body, shouting, staring continuously at the same spot, weakness and nausea, disturbed sleep, and increased heartbeat. Local expressions most often reported were: *tāuko jiring jiring huney*

(triggering headache), *mutu lulo hune* (feeling limping in heart), *mutu halliney* (feeling shaking of heart), *mutu kamjor hune* (feeling weakness in heart), *mutu kāmne* (feeling trembling of heart), *maan mā dheraikurā khelney* (thinking a lot), *jiu garungo hune* (heavy body), *jiumā kanda umrine* (goose bumps all over the body), and *jhumma banauchha* (feeling dizzy), *jiumā sola hānchha* (prickly pain in the body), *hāt, khuttā jham jhamāuchha* (tingling sensations in hands and feet).

2.4.3.2 Causal attributions

Study participants highlighted personal as well as communal attributes that made individuals vulnerable to possession and offered socio-cultural and cosmological explanations. The following personal attributes or liabilities were recounted as reasons why a person might be prone to possession: weak heart, weak soul, weak and fearful personality, *graha dashā bigreko* (disruption in astrological signs or stars), *kamjor bhāgya bhayeko* (weak fate), *din bigreko* (unfortunate day), practicing or believing in witchcraft and other supernatural powers, low self-confidence, lack of self-control, and weak *karma*.

Communal attributes that rendered a whole community or vulnerable individuals liable to possession included, carelessness in carrying out traditional rituals, which might have angered ancestors. For example, a key informant stated, "there was a priest in the village who used to take care of all the necessary rituals in the village but after his demise, his son, who was supposed to take over his father's job did not act responsibly." Other episodes were attributed to a curse brought on by inter-caste marriages. According to several study participants, younger villagers had started to get married across caste lines, an act that was believed to "pollute" the clan (*kul bigryo*). Consequently, clan deities became upset and cast a curse upon the entire

village. Finally, a smaller number of participants indicated that the current problem in the village could also be attributed to *tanāb* (mental tension), too much work, *maan mā dherai kurā khelāyera* (thinking a lot), contagious disease, lack of a balanced diet and/or physical weakness. A school teacher explained:

"I feel that the women and girls who fainted had been lacking love in their lives, did not have close friends to talk to, did not have their husbands with them, had to do all the household chores all by themselves, had to take overall responsibilities hence thought a lot about these issues and were upset. Therefore, they fainted. And the boys who fainted might just have been unknowingly imitating their mothers and grandmothers who have similar issues at their house."

As mentioned earlier, the research team provided psycho-education to village members participating in the focus groups, suggesting that possession could be understood as a response to psychosocial stress and difficulties coping. However, during the psycho-education sessions, some villagers questioned the view that stressful life situations could lead to *chhopne* by comparing those affected by possession to people who did not experience possession despite the fact that they were less well off. Most participants also argued that *chhopne* could be experienced as a result of *pagalpan* (madness) or, more broadly, any mental disorder or "mass hysteria" (some villagers used this English term). Many of the focus group participants remained convinced that *chhopne* was due to supernatural and cosmological forces.

In addition to factors associated with vulnerability, villagers also described protective attributes, which included being a man (usually only women and children were believed to be

prone to attacks by *boksiharu*), not believing in witchcraft and sorcery, strong heart, self-confidence, and *baliyo graha* (strong stars/planet).

2.4.3.3 Social implications

Possession states allowed women to speak in ways that were socially proscribed, including expressing frank criticism and using disrespectful or obscene language, which they would usually not utter in a conscious state. For example, when possessed, some women accused their neighbors, mother-in-laws, or daughter-in-laws of being *boksiharu* and inflicting harm on them. While this might serve the purpose of emotional relief, it also led to conflicts in the community. At one point, several possessed women and their families accused two village women of practicing witchcraft, sent a *Jhānkri* (shamanic healer) to their place to pacify them, and finally forced them and their families out of the village. In response, the accused women filed a complaint at the police station, which in turn increased the conflict between the accused families and their former neighbors.

After months of interpersonal conflicts, villagers became weary of the possessed women and their accusations. As one village woman said, "This village was safe and peaceful even during the armed conflict in Nepal. Except for the isolated incidents, nothing major happened here because people were united. However, because of this problem people are fighting among themselves. They boycott each other in social and religious events." Due to such sentiments, the possessed women generally felt rejected and misunderstood. During their focus group, some of the possessed women shared that "the villagers often tease us. Perhaps, during the spells we talked nonsense, which might have hurt the villagers. So, some villagers spat at us whenever we passed by. This unknown illness has brought up dispute among villagers."

Study participants indicated that several of the possessed women were unable to cope with the ensuing distress. One young woman attempted suicide by taking an overdose of sleeping pills complaining that her illness had caused her family's financial ruin and that she did not want to her parents to go through more hardship in the future. Other women converted from Hinduism to Christianity, hoping that the new faith would protect them from further spells. In addition to these individual cases, there was a pervasive sense of anxiety and apprehension among the villagers that something evil was about to happen if the problem was not soon resolved. A woman expressed this anxiety saying "there are grown up girls in the village, what will people think who come to ask for hands of our daughters for marriage, if they know about this illness in our village?"

2.4.3.4 Belief, suggestibility and contagion of possession

Study interviews suggested that the affected women were highly suggestible and had strong beliefs in witchcraft and spirit possession. The following quote by an affected woman illustrates this responsiveness to suggestions:

"We [a group of women regularly experiencing possessions] went to see a $guru^5$ in Kathmandu. The guru asked us to put a lemon on our palm and asked us to tightly hold it and not to let it slip at any cost. He suggested that if the illness

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⁵ The general meaning of the word *guru* is teacher. Today, the term is used in Nepal specifically to address a religious leader (*dharma guru*), or a cult leader, priest (*pujari*), astrologer, etc. At the case study site, for instance, villagers used the term *guru* to address the tantric healer and his teacher, *guru Gorakhnath*.

was caused by *boksi* then the lemon would try to escape and it would be very hard for us to control. It was very difficult for us to hold that lemon. It was trying to slip away from our hands. We tightened our fists in an effort to hold it but it wouldn't give up. Finally, the *guru* asked us to let go off the lemon and we did."

There was clear evidence of the influence of modeling in the spread of the possession clusters. Most of those who were possessed after the initial case said that they had seen their friends or neighbors collapse because of the possession before they became possessed themselves. While observing the spells, they felt the sensation that they would also faint but somehow managed to control it. However, when the possessed women told them during a spell that it was 'their turn now' ($aba\ tero\ p\bar{a}lo$), they too experienced possession the next day.

Rejection of the idea of possession seemed to influence vulnerability. Those who were not affected said that, while they believed in *Karma*, bad *graha* (stars) and fate (bhāgya), they did not believe that witchcraft and spirits could possess them. One unaffected woman said:

"I believe that there exists some natural force that can influence our *graha* and *bhāgya*. There might be spirits and all, but I do not believe that any human being has the capacity to possess or afflict another human. My husband was in the Nepal police for several years and he also believes the same."

Other unaffected women who believed in witchcraft said that they were spared because they had a strong fate and good *graha*. Interestingly, while all villagers, including the affected women, accepted the explanation that the problem was caused by upset clan deities, during possession women continued blaming *boksiharu* for the affliction. This suggests that belief in witchcraft and spirit possession, suggestibility and exposure all played a role in the spread of

possession. Of course, it is possible that individuals' beliefs reflected rather than caused their experiences and that compelling possession experiences might change individuals' convictions, turning skeptics into believers. However, we did not encounter such narratives.

2. 5 Discussion

The quantitative results of this study show that compared to the non-possessed, the possessed women had a higher number of traumatic exposures and higher rates of symptoms of mental health problems. Being possessed was positively associated with having symptoms of common mental disorders, i.e. anxiety, depression and PTSD. Possessed women also had significantly higher rates of impairment in daily functioning and impairment was strongly associated with symptoms of PTSD, anxiety and depression.

Interpreting the quantitative study results through the lens of the biomedical model of mental illness as outlined in the DSM/ICD, the women's symptoms and behaviors, along with the absence of evidence for neurological disorder, suggest that the women suffer from mental disorders, specifically, Conversion Disorder (ICD 10, 1992) or Dissociative Trance Disorder (DSMIV-TR, 2000). In addition, the symptom measures suggest that many have coexisting anxiety, depression or PTSD.

The qualitative findings, however, indicate that the situation is more complex. Neither the possessed women and their family members, nor the traditional healers, explained the possession and its related manifestations in terms of mental health. In fact, they explicitly rejected the psychological explanations given to them during the psycho-education session following every focus group. Moreover, the possessed women did not respond to any of the biomedically oriented interventions including medication, counseling, and psycho-education.

Instead, women who had fathers or husbands living in Kathmandu explained that they ceased having possession experiences as soon as they left their village to visit their menfolk. In-depth exploration of issues related to impairment in the focus groups and key informant interviews found that women did not feel "impaired" due to mental health problems, but rather because of their precarious living conditions. For instance, they shared that they often had to wait until 2 AM to fetch water and as an obvious consequence they had trouble waking up in the morning, which, in turn, resulted in difficulty in performing household chores and taking care of family members. Moreover, this chore interfered with attending religious activities, maintaining personal hygiene and so on.

There was an important discrepancy between the psychiatric perspective and the women's own accounts, which can be understood in several ways. The women may have refused to accept biomedical explanations because mental illness is highly stigmatized in Nepal or because they lack mental health literacy (Kermode et al., 2010). To the extent that accepting an explanation provides reassurance, coherence and supports treatment adherence, this might also explain why biomedical interventions did not appear to have any impact on the health outcomes of the possessed women.

Moreover, given that all rural villages were directly or indirectly affected by the decade-long armed conflict in Nepal, the mass possessions might be interpreted as expressions of distress connected to traumatic experiences that women were reluctant to disclose (e.g. Neuner, et al., 2012; Igreja, et al., 2010; van Ommeren, et al., 2001; Pineros, et al., 1998; Chakraborty, 1993). However, the study participants noted that their village was considered one of the safest places throughout the conflict. They acknowledged that there was a sense of general fear as the Maoists and the state army paid frequent visits to the village, but none of the participants

mentioned incidents of violence or traumatic experiences directly related to the armed conflict when prompted. This suggests that the perceived negative impact of the armed conflict on health was very low, and that the possession events in the village cannot be directly attributed to the effects of the armed conflict.

Much of the anthropological literature suggests that possession is linked to the oppression of women as well as gender-based violence. In this context, possession is interpreted as a coping strategy that allows women to express their frustrations and to regain their power and social position in the community (Gellner, 2001, 1994; Boddy, 1994; Castillo, 1994b; Fisher, 1989; Lewis, 1966; Nichter, 1981). Yet, in this study both possessed and not-possessed women claimed that there was no more oppression in their community than any other and no outright violence perpetrated in families or the community. While they acknowledged having quarrels over disagreements between family members and pointed to the fact that women faced higher workload compared to men, they did not consider these acts of violence but rather "fate" and thus part of their normal daily lives. When study participants were prompted to reflect on the obvious gendered nature of possession, the majority of women emphasized cosmological factors, fate and *Karma*. Men, on the other hand pointed to women's intrinsic characteristics such as *kamjor maan* (weak heart/mind), *maan mā dherai kurā khelāune* (thinking a lot), doubtful and suspicious nature, and strong belief in witchcraft and supernatural powers.

The women's own understanding of their affliction points to the importance of social-contextual factors and an integrative model of possession would include both social and personal factors. The results suggest that there was no single psychosocial determinant of the spirit possession experiences in this village but more likely the interaction of multiple psychosocial factors (de Jong and Reis, 2010; Fisher, 1989; Kerckhoff, 1982). That is, neither pre-existing

mental illness, socio-political violence, nor traumatic exposure, or the oppression of women alone can explain the prevalence of spirit possession. All of these socio-contextual factors may make individuals more vulnerable to physical as well as mental health problems (Fisher and Baum, 2010). These social factors may have made the women of the village susceptible to attacks by spirits. The death of a child of the index case triggered the first possession event. Once the problem occurred, social modeling, response expectancies, and reinforcement (Mazzoni, et al., 2007; Kirsch, 1985) as well as individual characteristics and motives (Seligman, 2005), including culturally-based beliefs, suggestibility (Giesbrecht, et al., 2008), and secondary gain came into play to amplify and maintain the problem. For example, acceptance and confirmation by villagers, family members and traditional healers that the possession was an affliction caused by *boksiharu* might have heightened fears that helped to maintain the problem. Figure 2 summarizes some factors that may contribute to the spread of possession experiences.

The traumatic incident described in the case study of Shakshi was the trigger for the epidemic of possession. The news of her experience spread and was received by others as a plausible and disturbing story. Those who were vulnerable because of pre-existing psychosocial problems, and with an individual propensity for dissociative experiences, then had their own possession experiences, which were modeled on the earlier episode and shaped and reinforced by the responses of others. At the same time, they now had a salient way to attribute their suffering to someone in the family, i.e. their own grandmother-in-laws or someone in the village who they had suspected of being a *boksi* and inflicting harm upon them or with whom they had disputes. After being possessed, they received more care and attention from family members; they got the opportunity to overtly criticize and challenge situations that they did not like and people with whom they disagreed. This freedom of expression gave them emotional release and a measure of

social power. Moreover, their families, the community and the traditional healers all acknowledged the seriousness of their affliction and accepted whatever they said during possession. This explicit acceptance reinforced everyone's conviction that the problem was caused by the action of *boksiharu*. This conviction, in turn, fueled the spread of the possession events and sustained the possession episodes over a longer period of time.

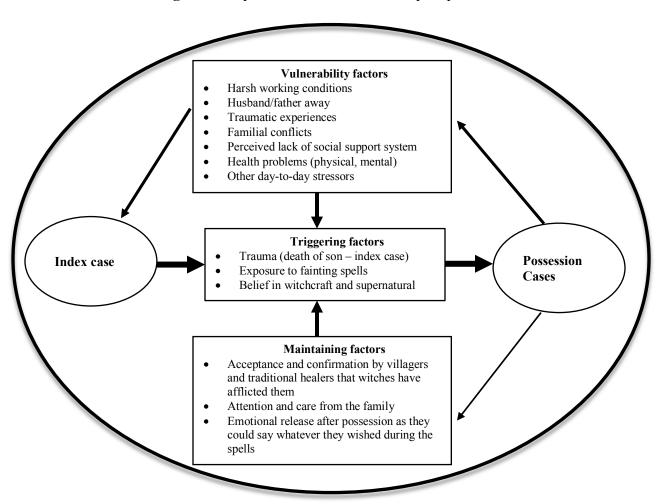


Figure 2: Psychosocial dimensions of spirit possession

Although similar patterns of possession behavior and causal attributions were observed across the cases, possession may serve different purposes for different individuals. For some, it

may serve as a way of drawing attention to or communicating about suppressed issues such as intra-familial conflicts; for others, it may serve as a coping strategy helping them deal with traumatic memories or day-to-day hardships. Possession thus, may function as an idiom of distress reflecting psychosocial difficulties as well as underlying mental health problems and as a cry for help or way to mobilize others to respond to an intolerable situation. These functions or uses of possession are not mutually exclusive and they may interact in complex ways that reinforce or undercut their social meanings and effects.

1) Possession as a unique mode of communication or cultural idiom of distress: Possession has traditionally been used as a means of communication between humans and spirits: yogis, and tantriks intentionally get possessed to communicate with other worlds or spirits; dhāmis, jhānkris and other mediums get possessed in order to help spirits communicate with their clients; traditional healers call the afflicting spirits to possess their clients so that they can communicate the reason for affliction. It makes cultural sense, therefore, that ordinary people who get possessed, however unintentionally, find they are able to communicate their suffering or predicament to their family or community especially, when there are few other socially acceptable means of expression, and when direct communication might cause further suffering. This suggests that possession functions as a cultural idiom of distress (Nichter, 1981). Nichter (1981) described how, in the case of South Kanarese Havik Brahmin women in India, local expressions of distress could only be understood in relation to both personal and cultural meanings, which included diverse idioms and explanations (e.g., weight loss, fasting, concerns about purity, evil eye, and spirit possession). According to Nichter, such idioms of distress reference cultural values, norms and stereotypes (see also Pedersen et al., 2010).

In the present context, possession may serve to convey distress and draw attention to personal conflict in a socially acceptable way. Given its potential function in communication, possession may also serve as a culturally-shaped way of expressing social suffering as well as underlying mental disorders. Mental illness is highly stigmatized in Nepal and so, people tend to hide symptoms that they think might be related to mental disorders and suffer in silence (Jack and Van Ommeren, 2007). Spirit possession is a widely recognized affliction that points to social conflicts and concerns rather than just the health of the individual. Hence, spirit possession may offer a culturally accepted way to express distress but also help mask underlying mental illness and provide a non-stigmatizing path to recognition and intervention for these women.

2) Possession as a coping mechanism: Coping generally refers to adaptive strategies consciously adopted by an individual in the face of difficulty (i.e. physical, social or emotional problems). Spirit possession, however, is experienced as involuntary and the afflicted individual usually appears not conscious or only partially aware of their behavior during the possession event and disavows awareness and control afterward. Psychologically, possession can be understood as involving dissociative mechanisms, in which behavior is governed by cultural models and scripts that are cognitively compartmentalized and held out of awareness (Kirmayer and Santhanam, 2001; Seligman and Kirmayer, 2008). The disavowal of causation and control serves to protect the person from moral blame and repositions them as afflicted and in need of care. At the same time, possession may serve as an active coping strategy through its expressive and communicative functions, which mobilize social support and conflict resolution.

Both of these views of possession raise complex issues of consciousness, agency and control. Consciousness, self-control and causal attributions of behavior involve separate though interacting processes and spirit possession illustrates ways in which ethnopsychological notions

of personhood can reconfigure the relationship between agency and awareness (Kirmayer, 2007). Spirit possession follows specific cultural scripts and, although it employs human capacities for absorption and role-playing, it is clearly socially learned behavior (Ram, 2012; Seligman and Kirmayer, 2008). Intentional possession is learned through the teaching of a *guru* or other practitioner and may involve many years of practice (Jones, 1976b; Maskarinec, 1992; Seligman, 2005). Unintentional possession is learned through gendered socialization (Ram, 2012), social exposure to the possession phenomenon and its outcome, and may be quickly acquired. Whether it begins with some conscious receptivity on the part of the individual, is actively resisted or occurs completely accidentally, unintentional possession may come to function as a mode of communication, idiom of distress, and coping strategy that serves the persons ongoing efforts to adapt and survive challenging social circumstances (Castillo, 1994a; Boddy, 1994; Ward, 1980).

This view of spirit possession does not coincide with the local understanding in the villages we studied in Nepal. Initially, no one was certain about the cause of the problem because all kinds of treatments – traditional as well as biomedical — had failed to help the possessed individuals. When traditional methods failed, villagers looked for biomedical treatment and when biomedicine also failed, they were left with no other choice but to accept supernatural explanations and interventions. None of the possessed women, their family members, or focus groups participants spontaneously associated the condition with traumatic experiences or other life stressors; nor did they view it as a mental health problem. Indeed, when the results of this study were presented to the community, they refused to accept the finding that possessed women had a higher risk of common mental disorders compared to the non-possessed women. They also did not see possession as a way of coping. Instead, they reaffirmed their view that spirits that were angry or upset had the ability to inflict harm by possessing people.

Some health workers who visited the village in the interim told community members that the problem was "mass hysteria". The term 'hysteria' was then described in classical Freudian terms, i.e. hysteria is caused by a lack of sexual satisfaction or unsatisfied sexual desire. This account was very humiliating for the affected women, particularly because their husbands were not with them; they had gone abroad to work or were away from home for other reasons. During the focus group, these affected women challenged the idea that they were suffering from hysteria. They completely rejected the idea by giving examples of young boys (8-12 years of age) who were also suffering and of other affected women whose husbands were living with them. Clearly, medical or psychological labels and diagnoses should be used very cautiously in this setting. Diagnoses made without taking into consideration the socio-cultural context and dynamics may have negative effects and exacerbate the problem.

In the end, the affected women were all treated by performing an extensive, village-wide traditional ritual, called "Khali Khane" (Gray,1987). Follow-up with a schoolteacher in April 2012, indicated that, after almost two years of continued suffering, the problem in the village had completely stopped, and the villagers had not heard of the fainting episodes in the village, and the shrine is no longer used by anyone. This only became possible after all the villagers united to collect money and engage traditional healers (dhāmi). As per the Dhāmis' instruction, the villagers from the 34 households that were suffering from spirit possession gathered at a designated place and, after a ritual procession, the spirits of their relatives who had died in an unnatural manner (suicide, burning, drowning, other accidents or conflict, etc.) were called forth in a process known as bāyu bolāune. During the bāyu bolāune, the spirit of the relatives came to one member of each family and talked about their death. After this, the villagers gathered about 60 stacks of wood and burnt them. The Dhāmis chanted their mantras and began dancing on the

fire until they extinguished the burning charcoal. It took several weeks to complete the whole ritual and cost almost 5 lakhs (about \$6000 US)—an enormous sum for the village.

2.6 Conclusion

This study explored the relationship between epidemic spirit possession and psychopathology in rural Nepal. We found evidence of increased symptoms of psychological distress suggestive of common mental disorders among the affected women. There was a pattern of spread from the index case, who had suffered a severe personal loss, to others in the community who shared beliefs about the risks of attack by *boksiharu*. A variety of mechanisms of secondary gain likely amplified and maintained the epidemic. The study clarifies some of the multiple uses of possession for conflict expression and resolution. It also highlights the discrepancy between biomedical, psychiatric, and social anthropological explanations and local understandings of affliction.

The study was conducted mainly amongst the Giri caste of Sindhupalchowk district and thus the findings may not represent the beliefs and practices related to spirit possession, mental health problems, and traumatic experiences of other cultural groups in Nepal. Further, because of the limited sample size and measures, it was not possible to perform multivariate analyses to identify interactions among social and individuals' factors in the causes of distress. Future studies should collect larger samples and representatives of other communities, castes and cultural groups in Nepal to better understand the interactions of context, beliefs and practice in the incidence and spread of epidemic spirit possession. For example, the economic strategy of men working outside the village for extended periods of time has had complex effects on village life. More detailed study of family dynamics might identify specific structural changes and interactional processes in families and wider social networks that contribute to emotional distress

in these villages. As well, studies should explore why fewer Dalits appear to be affected by possession despite their "double victimization" due to the Hindu caste system, greater exposure to social stressors, which is associated with higher risk for mental health problems in some studies (Bennett, 2005; Kohrt, et al., 2009; Luitel, et al. 2013). In small villages, woman of all castes may experience many of the same social stressors. It may be that higher caste women have greater constraints on their social behavior and expressions of distress, increasing the likelihood of adopting possession as a mode of communication or coping (Bennett, 1983). Finally, there is evidence from India (Ullrich 1993, 2011) that changes in women's roles and social power may be associated with shifts in modes of expressing distress. Longitudinal studies can examine whether comparable changes occur in Nepal with ongoing social change.

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Introduction to Chapter Three

In Chapter Two, we presented a mixed-methods case-control study of a single village where a cluster of people, mainly adult women, experienced unintentional possession (*chhopne*) episodes. The objective of this study was to compare sociocultural characteristics, trauma experiences, impairment in daily functioning, and prevalence of symptoms of anxiety, depression and PTSD among women who had experienced at least one episode of *chhopne* during the outbreak in the community and in a demographically matched group of women who had similar exposure to *chhopne* but who had never experienced *chhopne* themselves.

Quantitative results indicated that women who experienced *chhopne* had higher rates of traumatic events and higher levels of symptoms of mental disorder compared to women who did not experience *chhopne*. Women with *chhopne* experience were nine times more likely to have generalized anxiety disorder compared to women not experiencing *chhopne* and only the women experiencing *chhopne* scored above the cut-off score on the PTSD symptom checklist. However, although compared to the non-*chhopne* group, a higher percentage of the *chhopne* group had traumatic experiences and depressive symptoms, the difference was not statistically significant. On the other hand, qualitative interviews with possessed individuals and their non- possessed friends, family members, and traditional healers indicated that they did not associate possession states with mental illness. Spirit possession was viewed as an affliction. Qualitative data suggested that possession was more likely an attempt to cope with and communicate distress caused by difficulties in day-to-day living and other stressors. Various psychosocial factors seem to play a role in the onset and spread of *chhopne* episodes in a cluster of people. The study found that cultural beliefs, suggestibility, and social modelling appeared to influence the spread of

illness behavior; that is, those who believed in witchcraft, who were suggestible, and who had witnessed a fellow villager being possessed by the spirit, were more likely to be possessed.

During the follow-up study, the research team presented the findings of the quantitative study and provided psychoeducation at the end of each focus group. We explained that spirit possession might be a culturally-shaped expression of mental duress or a reaction to distressing life situations. Participants in the focus groups resisted this notion and argued that possession was rooted in cosmological and supernatural disturbances. Thus, possession episodes were viewed as an affliction unrelated to illness but that reflected individual as well as communal spiritual behaviors and practices. Study 1 concluded that MPI-related spirit possession is a multi-dimensional phenomenon that cannot be viewed simply as a culturally influence variant common mental disorders.

Clearly, not all the individuals in the village who were exposed to *chhopne* episodes developed the symptoms themselves—even among those with higher levels of trauma, and symptoms of anxiety or depression. Individual vulnerability factors must influence those who develop *chhopne* in a cluster or epidemic. Study 1 identified some potential vulnerability or risk factors; however, it is not clear whether the same factors that affect adults also affect adolescents. Hence, Study 2 examined the correlates of dissociative experiences in a heathy school-population.

Based on the findings of the first study and a review of the literature, we hypothesized that, in addition to psychological distress and stressful or precarious living situations, individual characteristics including hypnotizability, susceptibility to emotional contagion, propensity to dissociation, lapses in day-to-day cognitive processing, fantasy proneness and traumatic

childhood experiences (i.e., physical, emotional, and sexual abuse in childhood) might play a role in the spread of trance and possession episodes from the index case to others.

Since the majority of the MPI outbreaks have been reported from public schools situated in the rural areas of the country and previous studies did not have consistent findings, we decided to conduct a study among adolescents in schools affected by MPI to better understand the potential causes and correlates of MPI phenomena. The trance and/or possession symptoms that among the main features of MPI in schools in Nepal are recognized as dissociative disorders in ICD-10 (World Health Organization, 1992) and the DSM-5, which includes spirit possession as a cultural variant of dissociative identity disorder (American Psychiatric Association, 2013). Children affected by MPI in schools in Nepal exhibit behaviours that resemble the elements of current ICD and DSM-based definition of dissociation as "a disruption of and/or discontinuity in the normal integration of consciousness, memory, identity, emotion, perception, body representation, motor control and behavior" (American Psychiatric Association, 2013, p. 291). Given this similarity to other types of dissociative disorder, we decided to test the relevance of current models of the etiology of dissociative experiences and behaviours—namely, childhood trauma, current distress (quality of life, depression and post-traumatic stress), and personality traits (cognitive failures, fantasy proneness and emotional contagion, hypnotizability)—in an adolescent population in Nepal. However, measures of several of these individual characteristics or personality traits had not been used in Nepal previously and culturally adapted and validated measures were not available. We therefore undertook the translation, cultural adaptation and pilot testing of the instruments to be used in later case-control studies. The translation and cultural adaptation procedure followed methods used previously in Nepal and advocated by van Ommeren and colleagues (1999). To validate the measures and explore their relationship to

dissociative phenomena, we conducted a cross-sectional survey of general adolescents. The specific aims of Study 2 were: 1) to assess the psychometric properties of the culturally adapted instruments that can be used to assess dissociation and its correlates; 2) to test if the current models of dissociative experience are applicable in a healthy adolescent population sample in Nepal. Details of this study are presented in Chapter Three.

Note: A version of this study is in preparation for journal submission as: Sapkota, R. P., & Kirmayer, L. J. (in preparation). Social and Psychological Correlates of Dissociative Experiences and Behaviors in Adolescent Schoolchildren in Nepal: A Path Analysis.

Chapter 3: Correlates of Dissociative Experiences and Behaviors in Adolescents

Abstract

Background: Mass psychogenic illness is a globally occurring dissociative phenomenon. In contemporary Nepal, mass psychogenic illness is common and a large number of young children and adolescents in schools are affected in mass by trance and possession episodes every year. However, the possible causes and correlates of these epidemics are not well understood and have not been widely studied in Nepal or globally. *Objectives*: This study set out to identify the potential correlates of dissociative experiences and behaviors in the school population to test if potential correlates of dissociation could predict episodes of trance and possession in schools in Nepal. Methods: Using a cross-sectional survey method, 314 healthy adolescents from 11 to 18 years of age attending schools in three districts of Nepal were assessed. Potential correlates of dissociation based on three causal models, namely, (i) childhood trauma, (ii) cognitive processes, and personality traits (i.e., cognitive failures, fantasy proneness, emotional contagion), and (iii) current distress (i.e., quality of life, depression, posttraumatic stress) were evaluated in a path analysis. These three models were merged to produce a hypothesized integrated model of dissociation. Results: Path analysis confirmed that each model is capable of independently predicting dissociative experiences and behaviors. However, the integrated path model suggested that the effects of childhood trauma and all other variables on dissociation are mediated by posttraumatic stress and cognitive failures. Simple mediation analysis using posttraumatic stress and cognitive failures as mediators in separate mediation models confirmed the full mediation of effect of childhood trauma on dissociation. *Conclusion*: Childhood trauma and fantasy proneness are important correlates of dissociative experiences and behaviors; however, they are neither

always necessary nor sufficient to produce dissociation. Various socioecological factors, cognitive and personality traits, and other contextual factors play an important role in determining the occurrence of dissociative experiences and behaviors. In order to meaningfully advance the field of research and clinical work on dissociative phenomena, future studies should focus on developing and testing comprehensive models of dissociation, rather than assuming single factor models.

3.1 Introduction

Mass Psychogenic Illness (MPI), also known by various other names such as mass/epidemic hysteria, mass sociogenic illness, mass conversion disorder, and medically unexplained symptoms (see: Bartholomew, 1990), is a global phenomenon and results in significant health, economic and social burden (Bartholomew, 2016; Bartholomew, Wessely, & Rubin, 2012). MPI epidemics have been reported throughout the world and continuously since the Middle Ages (Hecker, 1846; Madden, 1857); however, possible causes and correlates of these epidemics are not well understood and have not been widely studied (Balaratnasingam & Janca, 2006; Bartholomew & Rickard, 2014; Bartholomew & Sirois, 1996; Bartholomew & Wessely, 2002; Boss, 1997; Sirois, 1974).

In contemporary Nepal, MPI is a common occurrence and a large number of young children and adolescents in schools are affected every year by trance and possession episodes, known as *chhopne/chhopuwā* in Nepali, (Pach, Rimal, & Shrestha, 2002; Sapkota et al., 2014; Van Ommeren et al., 2001). To date, however, these epidemics have been largely ignored by the mainstream health care system in Nepal (Sapkota et al., 2014). This may be, in part, because MPI is not perceived as a health condition that needs to be dealt with medically, but rather as a

spiritual affliction originating from "social malpractices, individual misfortune, or the capriciousness of spirits" (Fisher, 1989, p.10; Jones, 1976). It is also conceivable that MPI is ignored because health workers, especially those working in rural areas where these outbreaks mainly occur, lack the necessary knowledge and skills to deal with such outbreaks.

Consequently, affected schools and communities frequently contact traditional healers to perform healing rituals and request non-profit organisations engaged in psychosocial and mental health care in Nepal for medical and psychological consultation and interventions. However, neither traditional healing nor medical and psychological consultation provided by non-profit organisations have been entirely successful in managing the outbreaks (Shakya, 2013). There are schools in Nepal that have been continuously affected by MPI outbreaks for 10 to 12 years (Sapkota & Kirmayer, in preparation).

To better understand the MPI phenomena and to appropriately respond to the requests of MPI-affected schools, more needs to be known about the possible causes, correlates and social contexts of MPI. We set out to advance understanding of MPI through a series of qualitative and quantitative studies in schools and communities in Nepal. The current study reports one of a series of studies that, drew upon current theories of dissociation to identify potential correlates of mass psychogenic illness.

3.1.1 Why Dissociation?

The DSM-5 defines dissociation as "a disruption of and/or discontinuity in the normal integration of consciousness, memory, identity, emotion, perception, body representation, motor control and behavior" (American Psychiatric Association, 2013, p. 291). The DSM-5 categorizes conversion disorders under Somatic Symptoms and Related Disorders, while

acknowledging that dissociative symptoms co-occur with conversion disorder (American Psychiatric Association, 2013; Brown, 2016). MPI was subsumed under conversion disorder in DSM-IV, however, no official diagnostic criteria exist (American Psychiatric Association, 1994, 2000; Balaratnasingam & Janca, 2006; Bartholomew & Wessely, 2002). The DSM-5 criteria for conversion disorder include altered voluntary motor or sensory function, mismatch between the presenting symptoms and medical findings, symptoms causing significant distress and impairment in social functioning (American Psychiatric Association, 2013). Of note, DSM-5 has removed criterion B in DSM-IV (p. 457), "Psychological factors are judged to be associated with the symptom," from the diagnostic criteria of conversion disorder (American Psychiatric Association, 1994, 2000, 2013; Black & Grant, 2014). International Classification of Disease (ICD-10), on the other hand, categorizes conversion disorder as a dissociative disorder (World Health Organization, 1992).

Although categorized as phenomenologically different conditions, "conversion" symptoms are among the most commonly reported features in dissociative phenomena, and several authors have argued that conversion disorder represents a somatic form of dissociation (e.g., Black & Grant, 2014; Brown, Cardeña, Nijenhuis, Sar, & Van Der Hart, 2007; Dell, 2006; Kirmayer & Santhanam, 2001; Lewis-Fernández, Martínez-Taboas, Sar, Patel, & Boatin, 2007; Nijenhuis, 2001; Sar, Akyuz, Kundakçı, Kızıltan, & Doğan, 2004; Seligman, 2005; Tseng & Zhong, 2012; van der Hart & Dorahy, 2009). For these reasons, some researchers have strongly critiqued the DSM's position on conversion. They have maintained that conversion symptoms have been considered the somatic manifestation of dissociation "since at least the time of Janet" (Brown, 2016; Dell, 2006, p. 3) and insist that conversion and dissociation are overlapping conditions with common underlying psychological processes—possibly variants of same

syndrome (Brown et al., 2007; Diseth, 2005; Espirito-Santo & Pio-Abreu, 2009; Kirmayer, 1994; Lilienfeld et al., 1999; Sar et al., 2004). Some even suggest that the current label in DSM-5, Functional Neurologic Disorder, has taken the study of dissociative phenomena back to the pre-Freudian era (Kanaan, 2017). Further, from a historical point of view, conversion and dissociation are conceptually and semantically reformulated forms of hysteria. Pierre Janet reframed what was then known as hysteria as dissociation and Sigmund Freud labeled hysteria as conversion disorder in the late nineteenth century (Frankel, 1996; Howell & Itzkowitz, 2016; Kihlstrom, 1992; Kihlstrom, Glisky, & Angiulo, 1994; LeBlanc, 2001; Merskey, 2001; Micale, 1993; Nijenhuis, 2001; Putnam, 1989; Spanos, 1996; van der Hart & Horst, 1989). Earlier versions of DSM (i.e., DSM-II; American Psychiatric Association, 1968) and the current version of ICD (i.e., ICD-10; World Health Organization, 1992) treat conversion and dissociation phenomena as subtypes of hysteria (i.e., conversion type and dissociation type) (Black & Grant, 2014; Brown, 2016; Diseth, 2005; Tseng & Zhong, 2012).

Dissociative trance and/or possession states are among the main presenting features of MPI in schools in Nepal. Frequent trance-like behaviors have been identified as "the single best predictor of a dissociative disorder" in children (Fagan & McMahon, 1984; Putnam, 1993, p. 42). Trance and possession are recognized as dissociative disorders by ICD-10 (World Health Organization, 1992) and the DSM-5 also includes spirit possession as a cultural variant of dissociative identity disorder (American Psychiatric Association, 2013; also see: Ross, 2011). Children affected by MPI in schools in Nepal also have various characteristics that closely resemble the elements of current ICD and DSM-based diagnoses of dissociative disorders. First, they experience disruptions in perception. Some affected children report that immediately before collapsing to the ground in a trance-like state, they see someone (usually an unidentified black

figure, or a "ghost-like" figure) trying to strangle them or take them away by pulling them by the hand. Others see the spirits of deceased women who died by suicide or other unnatural causes (usually presenting as a white figure). Second, the children experience disintegrated memory. They usually do not remember what they did or what happened during their fainting spells. Third, they experience alterations in identity and/or awareness. Affected children are either possessed by spirits and behave accordingly (e.g., if they are possessed by $n\bar{a}g$ devata [snake god] they crawl like a snake on the ground) or collapse in a trance-like state and do things that they would not do in a "normal" conscious state, such as scolding, hitting or spitting at teachers and friends. Finally, affected children display disruptions in behavior—for example, screaming, continuously weeping, running around for no apparent reason, and so forth—which they disavow after returning to awareness (Sapkota & Kirmayer, in preparation).

Wherever they may be situated in the classification systems, the common features shared by dissociative or conversion disorders, and by extension *chhopne* phenomenon seen in schools in Nepal, are a "partial or complete loss of the normal integration between memories of the past [or recent events], awareness of identity and immediate sensations, and control of bodily movements" (World Health Organization, 1992, p. 122). Thus, based on the definitions provided in ICD and DSM classification systems and current understandings of the concept of dissociation, mass psychogenic illness episodes experienced by children in schools and people in communities fall into the realm of both conversion and dissociative phenomena (see also:Bartholomew & Wessely, 2002). It is important to note, however, that by making a comparison with conversion and dissociative disorders and referencing ICD and DSM, we in no way intend to suggest that *chhopne* episodes in Nepal are pathological (see: Cardeña & Weiner, 2004; Dalenberg & Paulson, 2009; McNamara, 2011; Seligman, 2005). Rather, we have drawn

this comparison in order to demonstrate that *chhopne* phenomenon may have similar, though culturally patterned, correlates and underlying processes and mechanisms to those of conversion or dissociation phenomena (Seligman & Kirmayer, 2008; Sierra & Berrios, 2001).

3.1.2 Models of dissociation

Over the years, many models have emerged to elucidate the psychological processes and etiology of dissociative phenomena in children, adolescents and adults, including: the discrete behavioral state model (Putnam, 1997), the betrayal trauma model (Freyd, 1994), the "type I" and "type II" trauma model (Terr, 1991), the disorganized attachment model (Liotti, 1992, 1999), the hierarchical (i.e., primary, secondary and tertiary dissociation) model (van der Hart, van der Kolk, & Boon, 1996; Van der Kolk, van der Hart, & Marmar, 1996), the structural dissociation of the personality model (Nijenhuis & van der Hart, 2011; van der Hart, Nijenhuis, & Steele, 2006), the detachment and compartmentalization model (Brown, 2006; Cardeña & Weiner, 2004; Holmes et al., 2005; Spiegel & Cardeña, 1991), and so forth. However, there exists no single agreed upon model of dissociation.

Of note, although reports of dissociative experiences in children and adolescents date back to the Middle Ages (see: Bartholomew & Rickard, 2014; Matossian, 1982; Yandell, 1881), little is known about dissociative experiences in children and adolescents compared to adults (Armstrong, Putnam, Carlson, Libero, & Smith, 1997; Boysen, 2011; Cardeña, 2012; Silberg & Dallam, 2009). Possible reasons for this lag include the view that dissociation in children is a normative developmental process related to the higher propensity of young children for imagination and fantasy as well as the lack, until the 1990s, of appropriate tools to identify and differentiate age-appropriate and pathological manifestations of dissociation (Cardeña, 2012).

Interest in and formal research on dissociative phenomena in children began only in mid-1980s after Kluft (1984) and Fagan and McMahon (1984) published case studies of children with multiple personality disorders (Becker-Blease, Freyd, & Pears, 2004; Cardeña, 2012; Hornstein & Putnam, 1992; Ogawa, Sroufe, Weinfield, Carlson, & Egeland, 1997; Putnam, 1997; Sar, Önder, Kilincaslan, Zoroglu, & Alyanak, 2014; Silberg, 2014; Somer & Ardino, 2011). Thus, existing models of dissociation originated mainly based on retrospective evaluation of the childhood situations (i.e., stress, abuse, attachment) of adults with multiple personality disorder (MPD), a severe form of dissociative disorder renamed Dissociative Identity Disorder (DID) in DSM-IV (American Psychiatric Association, 1994; Kihlstrom, 2005).

The two most debated, overarching, etiology-based models of dissociation that are pertinent to the current study are the trauma model (for example, see: Dalenberg et al., 2012; Dell, 2006; Gleaves, 1996; Putnam, 1997; Ross et al., 2008; Vissia et al., 2016) and the sociocognitive model (for example, see: Lilienfeld & Lynn, 2015; Lilienfeld et al., 1999; Lynn et al., 2014; Spanos, 1994; Spanos, 1996).

The trauma model posits that dissociation and its disorders are caused by severe trauma, especially childhood trauma (Dalenberg et al., 2012; Gleaves, 1996; Ross et al., 2008; Vissia et al., 2016). The main thesis of the trauma model, since the time of Pierre Janet, is that traumatized individuals dissociate or "mobilize dissociation" during or after severe trauma as a defense to maintain their physical and psychological integrity. The "vehement emotions" and the pain aroused by the trauma results in "splitting off" or "compartmentalization" of traumatic memories as a means of coping with the debilitating impact of traumatic experiences; since these memories and experiences are not coherently integrated, they manifest as "alters" (other personalities or agencies within the person) or other dissociative experiences in stressful situations in later life

(Herman, 1992, p. 170; Ludwig, 1983; Näring & Nijenhuis, 2005; Nijenhuis & van der Hart, 2011; Putnam, 1997; Somer & Ardino, 2011; Spiegel & Cardeña, 1991; Terr, 1991; Van der Kolk, 1996; Van der Kolk et al., 1996).

Although, there is no consensus on the mechanisms or the psychological processes involved or the exact nature of the association between traumatic exposure and dissociative experiences (see: Dell, 2011; Gleaves, 1996, p. 55; Kirmayer, 2011; Nijenhuis & van der Hart, 2011), a large body of cross-sectional and longitudinal studies have affirmed the association between childhood trauma (physical, sexual and emotional abuse) and dissociative experiences in children and adolescents as well as in adults (for example, Hornstein & Putnam, 1992; Lansford et al., 2002; Macfie, Cicchetti, & Toth, 2001; Pick, Mellers, & Goldstein, 2017; Putnam, 1993; Putnam, Helmers, & Trickett, 1993; Ross et al., 2008; Sar et al., 2014; Trickett, Noll, & Putnam, 2011; Vissia et al., 2016). The trauma model is ubiquitous in the clinical psychiatric literature (Giesbrecht, Lynn, Lilienfeld, & Merckelbach, 2008) and has become so influential that DID is now considered a posttrauma disorder and DSM-5 has introduced a "with dissociative symptoms" subtype of Posttraumatic Stress Disorder (PTSD) (American Psychiatric Association, 2013, p. 271; Bremner, 2010; Spiegel et al., 2013; see: Terhune & Cardeña, 2015; Wolf et al., 2012).

Against the backdrop of a rapid increase in trauma model-based diagnosis of MPD (see: Hacking, 1995; Kihlstrom, 2005; Kirmayer, 1994; Lilienfeld & Lynn, 2015; Lilienfeld et al., 1999), especially in North America, Spanos (1994) proposed an alternative sociocognitive model of multiple personality disorder (also see: Spanos, 1996). The sociocognitive model encompasses two sets of hypothesizes. First, dissociation, manifested in the form of multiple identities, spirit possession, mass hysteria, and by extension other dissociative phenomena, is a socially and

culturally learned behavior that is spontaneously enacted by the individual when in need. And second, this enactment requires some kind cognitive capacity (i.e., suggestibility, hypnotizability, dissociative tendency, propensity to fantasize), making the person able or liable to exhibit those learned behaviors when it is socially and contextually expected of him or her. Further, the sociocognitive model posits that these cognitive qualities make some individuals particularly vulnerable to the suggestive influences of the media or therapists and, hence, iatrogenic development of multiple alters (Lilienfeld et al., 1999; Lynn et al., 2014; Spanos, 1994, 1996).

Thus, the sociocognitive model construes dissociative phenomena as the product of social learning, expectation and certain intrinsic individual cognitive and personality factors; moreover, Spanos (1994) asserts, neither trauma nor severe psychopathology is a prerequisite for dissociative experiences and behaviors (Lilienfeld & Lynn, 2015; Lilienfeld et al., 1999; Lynn et al., 2014; Piper & Merskey, 2004; Spanos, 1994, 1996).

In recent years, a newer version of the sociocognitive model, known as the fantasy model, has emerged in the dissociation literature (see: Brand et al., 2016; Dalenberg et al., 2012; Lynn et al., 2014). The fantasy model is theoretically consistent with the sociocognitive model of dissociation but emphasizes the role of cognitive and personality trait factors (i.e., cognitive failures, fantasy proneness, suggestibility) in the development of dissociative experiences and behaviors (see: Geraerts, Merckelbach, Jelicic, Smeets, & van Heerden, 2006; Giesbrecht et al., 2008; Merckelbach, Horselenberg, & Schmidt, 2002). The fantasy model theorizes that dissociation overlaps with fantasy proneness, suggestibility, and cognitive failures, which render certain individuals more likely to engage in inaccurate or exaggerated reporting of traumatic experiences, thus inflating the positive relationship between reported trauma and dissociation (Giesbrecht et al., 2008; Lynn et al., 2014; Merckelbach, Boskovic, Pesy, Dalsklev, & Lynn,

2017; Merckelbach & Jelicic, 2004; Merckelbach & Muris, 2001; Merckelbach, Muris, & Rassin, 1999; Muris, Merckelbach, & Peeters, 2003; also see: Myrick & Brand, 2016).

Given the lack of new research, the debate over the relative merits of the trauma versus sociocognitive models of dissociation is at an impasse. Recently, a number of researchers, including the advocates of these competing models, have acknowledged the need for a comprehensive model that integrates trauma, sociocognitive, and other variables (Dalenberg et al., 2012; Lemons & Lynn, 2016; Lynn et al., 2014; Seligman & Kirmayer, 2008). However, very little progress has been made in this direction so far (Boysen, 2011; Silberg & Dallam, 2009; Vissia et al., 2016). This study represents one of the first attempts to integrate and test these models in a sample of "healthy" adolescents.

3.1.3 Hypothesized integrated model of dissociation

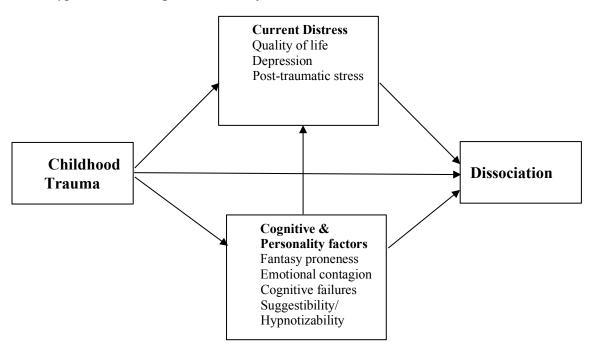


Figure 2: Hypothesized Integrated Model of Dissociation

The hypothesized integrated model accommodates some of the variables identified to be associated with dissociative experiences and behaviors by both trauma and sociocognitive models and posits that there are multiple pathways to the development of dissociative experiences and behaviors (see: Figure 1). This model is based on existing scientific evidence as well as the key observation that not everyone who was traumatized in childhood experiences dissociation, and not everyone who experiences dissociation was traumatized in childhood (see: Briere, 2006; D. Cicchetti & Banny, 2014; Kendall-Tackett, Williams, & Finkelhor, 1993; Lewis-Fernández et al., 2007; Liotti, 1999; Lyons-Ruth, Dutra, Schuder, & Bianchi, 2006; Seligman & Kirmayer, 2008). More specifically, this observation entails the following: 1) childhood trauma may predict dissociative experiences, though not all traumatized people experience dissociation; 2) there must be factors that mediate the effect of childhood trauma on dissociative experiences, and 3) not all who experience dissociation are traumatized, therefore, 4) there must be factors other than trauma that make an individual susceptible or insusceptible to dissociative experiences.

The notion that dissociative experiences and behaviors (DEBs) develop in response to trauma is now a classic theory (Patihis & Lynn, 2017). As mentioned briefly in the previous section, various studies including, retrospective, cross-sectional and longitudinal surveys and meta-analyses, although mostly conducted in the Euro-American populations (see: Lewis-Fernández et al., 2007), have found an association between childhood trauma and DEBs in adolescents and in adults (Dalenberg et al., 2012; Ogawa et al., 1997; Sar et al., 2014; Trickett et al., 2011; Van IJzendoorn & Schuengel, 1996).

However, as some researchers have noted, it would be too simplistic to assume that childhood trauma is the only causal pathway to dissociation (Frankel, 1996; Kirmayer, 2011;

Lilienfeld et al., 1999; Merckelbach & Muris, 2001; Schaffler, Cardeña, Reijman, & Haluza, 2016; Seligman & Kirmayer, 2008). First, research studies conducted in diverse geographic and cultural contexts have implicated other potential sources of traumatic stress such as natural disaster, war and violence in the development and/or increase in various forms of dissociative phenomena such as mass psychogenic illness, sprit possession, and other dissociative symptoms such as amnesia, depersonalization, and derealization (Cardeña & Spiegel, 1993; Igreja et al., 2010; Ilechukwu, 1992; Jilek & Jilek-Aall, 1977; Jong & Reis, 2013; Murphy, 1982; Neuner et al., 2012). In addition, a range of other potentially traumatizing events (PTEs) such as parental migration, parentification, observed trauma, loss, traffic accidents, traumatic medical procedures, and so forth, have been found to be associated with DEBs (Diseth, 2005; Gušić, Cardeña, Bengtsson, & Søndergaard, 2016; Murray, Ehlers, & Mayou, 2002; Van der Kolk, 1996; Van Duijl, Nijenhuis, Komproe, Gernaat, & De Jong, 2010; Van Ommeren et al., 2001). Thus, all kinds of traumatic exposure across the lifespan, rather than childhood trauma alone, may result in dissociative experiences and behaviors in a subset of the trauma-exposed population (Briere, 2006).

Second, researchers have found that dissociation is associated with various other mental health problems and symptoms such as general distress, depression, anxiety, posttraumatic stress disorder (PTSD), borderline personality, suicidality, eating disorders, panic disorder, conversion disorder, somatization, psychotic disorder, alexithymia, and substance use disorder (Bozkurt, Duzman Mutluer, Kose, & Zoroglu, 2015; Briere, Hodges, & Godbout, 2010; Dorahy et al., 2017; Ellason, Ross, & Fuchs, 1996; Geraerts et al., 2006; Maaranen et al., 2005; Martínez-Taboas & Bernal, 2000; Palmisano et al., 2017; Sar, 2016; Sar et al., 2004; Van IJzendoorn & Schuengel, 1996; Vanderlinden, Vandereycken, Van Dyck, & Vertommen, 1993). However, it is

not clear in the psychiatric literature what this association means; for example, it is not clear whether DEBs precede or follow mental health problems, or whether both conditions are the outcomes of other factors (e.g., genetic factors, childhood trauma, attachment style, personality traits) (see: Berenbaum, Kerns, & Raghavan, 2000; Cardeña, Lynn, & Krippner, 2017; Dalenberg & Carlson, 2012; Kihlstrom, 2005). Moreover, there exists evidence that dissociation mediates the effect of childhood and other traumas on PTSD, depression and several other mental health problems (Ensink, Berthelot, Bégin, Maheux, & Normandin, 2017; Kisiel & Lyons, 2001; Ross-Gower, Waller, Tyson, & Elliott, 1998; Somer, 2002; Twaite & Rodriguez-Srednicki, 2004). Researchers have also found that current state of posttraumatic stress, depression, anxiety, substance abuse, and so forth mediate the effect of childhood and other traumas on dissociation (Briere et al., 2010; see: Dalenberg & Carlson, 2012; Mulder, Beautrais, Joyce, & Fergusson, 1998; Terock et al., 2016). And it is well established in the trauma literature that mental health problems including depression, PTSD, and dissociative disorders can be sequelae of childhood trauma (Briere et al., 2010; D. Cicchetti, 2016; D. Cicchetti & Banny, 2014; Hornstein & Putnam, 1992; Lansford et al., 2002; Read, Os, Morrison, & Ross, 2005; Trickett et al., 2011; Van der Kolk, 1996).

Third, extant literature suggests that trauma, including childhood trauma is not always necessary or sufficient to produce dissociative experiences and behaviors (Briere, 2006; Briere et al., 2010; Kirmayer, 1994, 2011; Liotti, 1999; Putnam, 1997; Sapkota et al., 2014; Seligman & Kirmayer, 2008; Van IJzendoorn & Schuengel, 1996). Researchers have made it consistently evident that individual socioecological factors such as family environment (i.e., parent/caregiver-child relationship, attachment style, quality of care), perceived/existing social and emotional support, and day-to-day stress ("daily hassles") are associated with dissociation and that these

factors influence the relationship between childhood trauma dissociation (Byun, Brumariu, & Lyons-Ruth, 2016; Carlson et al., 2001; Dutra, Bureau, Holmes, Lyubchik, & Lyons-Ruth, 2009; Gušić et al., 2016; Irpati, Avasthi, & Sharan, 2006, p. 570; Irwin, 1996; Liotti, 1992; Lyons-Ruth et al., 2006; Narang & Contreras, 2005; B. Y. Ng & Chan, 2004; Ogawa et al., 1997). Quality of life is also implicated both as a predictor and an outcome in all kinds of mental health problems including dissociation, PTSD, and depression (Olatunji, Cisler, & Tolin, 2007; Pyne et al., 1997; Warshaw et al., 1993; Zatzick et al., 1997). Although there are no studies assessing the association between dissociation and comprehensive quality of life (including all seven domains: material well-being, health, productivity, intimacy, safety, social well-being, and emotional well-being), there is emerging evidence of an association between health-related quality of life and dissociative experiences, conversion disorder, and non-epileptic psychogenic seizures (Baranyi et al., 2010; Mitchell, Ali, & Cavanna, 2012; Ozenli, Ozisik, Tugal, & Yoldascan, 2008).

Fourth, numerous studies have identified personality characteristics (i.e., the "Big Five" factors of personality: Extraversion, Agreeableness, Conscientiousness, Neuroticism, Openness) as correlates of dissociation and various mental health problems (Groth-Marnat & Jeffs, 2002; Malouff, Thorsteinsson, & Schutte, 2005; Modestin, Lötscher, & Erni, 2002; B.-Y. Ng, Yap, Su, Lim, & Ong, 2002; Ruiz, Pincus, & Ray, 1999). Also, researchers have established that dissociative experiences are related to and/or overlap with certain cognitive and personality trait-like factors such as hypnotizability or suggestibility, fantasy proneness, cognitive failures, and schizotypy (Giesbrecht et al., 2008; Giesbrecht, Merckelbach, Kater, & Sluis, 2007; Kihlstrom et al., 1994; Merckelbach & Muris, 2001; Merckelbach et al., 1999; Muris et al., 2003). Further, although trait-like factors are not "easily open to transformation" (Lewis, 2014, p. 6), there is evidence that childhood trauma is significantly positively associated with personality

characteristics and personality disorders (Choi & Park, 2017; D. Cicchetti, 2016; D. Cicchetti & Banny, 2014; Leigh Wills & Schuldberg, 2016; Malouff et al., 2005). Although the relationship between dissociation and *emotional contagion*—posited to be an innate process enabling one to automatically imitate and synchronize with the emotions and actions of others (Hatfield, Cacioppo, & Rapson, 1994)—is not known, emotional contagion is of interest in this study because it has been implicated in MPI as an underlying process (Cardeña, Terhune, Lööf, & Buratti, 2009; Hatfield, Thornton, & Rapson, in preparation). Emotional contagion has also been found to positively correlate with various trait-like qualities, such as hypnotizability (Cardeña et al., 2009), emotionality, sensitivity to others, self-esteem, empathy, and to be negatively related to self-assertiveness and emotional stability (Doherty, 1997)—all qualities that have implications for mental health and illness (Krueger, Caspi, Moffitt, Silva, & McGee, 1996; L.-O. Lundqvist, 2008; Malouff et al., 2005).

Taking account of these multipronged relationships between childhood trauma, dissociation and other cognitive and personality variables and forms of psychological distress, it is clearly too simplistic to assume that childhood trauma is the only causal pathway to dissociation. Thus, in the present study, we assumed that there are multiple pathways to dissociation based on the trauma and sociocognitive (fantasy) model of dissociation and taking into account the associations established in the existing literature (between childhood trauma and mental health problems, between mental health problems and dissociation, between family environment and existing social and emotional support and dissociation; and between childhood trauma and cognitive and personality characteristics and disorders). We further assumed that current distress factors (i.e., depressive symptoms, posttraumatic stress and quality of life) and

cognitive and personality factors (i.e., cognitive failures, fantasy proneness, and emotional contagion) are intermediary factors in the path from trauma to dissociation.

3.1.4 Objectives and Hypotheses

The general objective of this study was to identify the potential correlates of dissociative experience and to develop an integrated model of dissociative experiences and behaviors (DEBs) that could be tested with the adolescent population affected by mass psychogenic illness in schools in Nepal (i.e., if DEB and its correlates could predict epidemics of episodes of *chhopne*).

The specific objectives were to:

- 1) Assess the psychometric properties of the culturally and semantically adapted instruments used to assess DEB and its correlates.
- 2) Test if the various models of dissociative experience—namely, childhood trauma, current distress (quality of life, depression and post-traumatic stress), and cognitive and personality factors (cognitive failures, fantasy proneness and emotional contagion)—are applicable in a healthy adolescent population sample.
- 3) Develop and test an integrated model of dissociative experience.

Based on the integrative model outlined in Figure 1, our specific hypotheses included:

- 1) self-reported childhood trauma would predict dissociative experience;
- 2) current distress factors would predict dissociative experience;
- 3) cognitive and personality factors (CPF) would predict dissociative experience.
- 4) childhood trauma would remain significantly associated with dissociation after controlling for the effects of current distress and CPF;

- 5) childhood trauma would be associated with current distress factors and cognitive and personality factors; and
- 6) cognitive and personality factors would be associated with current distress factors.

3.2 Methods

3.2.1 Setting and Participants

Data were collected from five public (government-funded) schools in Kathmandu, Dang and Gulmi districts. The education system in Nepal can be broadly categorized into public and private, although there are distinctions within each category (Thapa, 2015). There are 29133 public and 5673 private schools in Nepal (Government of Nepal Ministry of Education, 2015). Private schools, associated with higher social status and high-quality English-language education, are located mainly in the urban areas and are accessible to students from middle- to high-income families. Public schools tend to be associated with lower social status and lower quality education, with students taught in Nepali-language. These public schools are scattered all over the country, serving students from low-income families in urban areas, and providing the only option available for the majority of the families in the rural areas irrespective of family income (Joshi, 2014; Lohani, Singh, & Lohani, 2010; Thapa, 2015). Currently, the Nepal Government spends approximately 12% of its total budget in the public education system and the government has made grade school-level education (grades 1 to 10) free in public schools in Nepal (Government of Nepal Ministry of Education, 2015).

For this study, we considered the demographics of the potential participants in the field study (i.e., students of public schools affected by mass psychogenic illness in Nepal), and

selected six schools representing similar urban (three in Kathmandu valley) and rural (two in Dang and one in Gulmi districts) settings. However, one school in Kathmandu city had to be dropped from the study because the school administration was not willing to allow students to participate in the survey during school hours and it was not possible to access all the students after school hours. The final sample comprised 314 students from five schools located in three different districts of Nepal.

3.2.2 Instruments

Several structured English-language questionnaires and a demographic information form were used in this study to assess dissociative experience (the dependent variable) and potential predictors (independent variables) including childhood traumatic experiences, distress factors (quality of life, depression, and posttraumatic stress), and cognitive and personality trait factors (cognitive failures, emotional contagion, fantasy proneness). Three of the instruments (i.e., Brief Childhood Trauma Questionnaire, Depression Self-Rating Scale and Child PTSD Symptom Scale) used in this study were previously translated and validated for use in Nepal (Kohrt et al., 2011; Kohrt et al., 2015). The others were newly translated and cross-culturally adapted using qualitative research steps as part of this study (Van Ommeren et al., 1999) (see: Section on *Instrument translation and adaptation* for details).

The Adolescent Dissociative Experience Scale (A-DES) (Armstrong et al., 1997) is a screening measure for dissociative experiences during adolescence. The A-DES consists of a 30-item Likert-type scale in which research participants rate each statement on a scale of 0-10, where 0 signifies "never," and 10, "always." Examples of A-DES items include: "I get back tests or homework that I don't remember doing;" "I have strong feelings that don't seem like they are mine." The total A-DES score is equal to the mean of all item scores. Items in the A-DES

correspond to four kinds of dissociative experiences and behaviours: dissociative amnesia, absorption and imaginative involvement, passive influence, and depersonalization and derealization. The A-DES has been widely used to assess dissociative experiences and behaviours (DEBs) among adolescents and children ranging from 11 to 19 years of age (Muris et al., 2003; Smith & Carlson, 1996). A mean score of 3.7 or above indicates significant dissociation (Armstrong et al., 1997).

The *Creative Experiences Questionnaire* (CEQ) (Merckelbach, Horselenberg, & Muris, 2001) is a 25-item self-report measure of fantasy proneness—the tendency to have frequent and intense involvement in fantasy and daydreaming (Giesbrecht & Merckelbach, 2006). Examples of CEQ items include: *As a child, I thought that the dolls, teddy bears, and stuffed animals that I played with were living creatures* and *I spend more than half the day (daytime) fantasizing or daydreaming.* Research participants are asked to respond to each item with "Yes" or "No" according to whether they agree with the statement or not. CEQ has been tested with wide range of age groups such as adolescents, undergraduate students and adults (age range: 14-60 years) (Doherty, 1997; Merckelbach et al., 2001; Merckelbach et al., 1999; Sánchez-Bernardos & Avia, 2006). Correlates of fantasy proneness include dissociation, cognitive failures, and self-reported trauma (Giesbrecht et al., 2008; Giesbrecht et al., 2007; Merckelbach et al., 2001; van der Kloet, Van Huntjens, Giesbrecht, & Merckelbach, 2014).

The *Emotional Contagion Scale* (ECS) (Doherty, 1997) is a 15-item measure of susceptibility to the influence of "others' emotions" (p.131). Examples of ECS items include: *If* someone *I'm talking with begins to cry, I get teary-eyed* and *I tense when overhearing an angry quarrel*. ECS assesses the mimetic propensity of an individual to five basic emotions: love, happiness, fear, anger, and sadness. Three items address each emotion. Participants rate their

response to each item on a 4-point scale ranging from 1 (Never) to 4 (Always). The total score is computed as a sum of all the items. The higher the score, the more susceptible a person is to emotional contagion. The ECS has been translated into many languages and has been mainly used with college students (Coco, Ingoglia, & Lundqvist, 2014; Doherty, 1997; Kevrekidis, Skapinakis, Damigos, & Mavreas, 2008; L. o. Lundqvist, 2006). Correlates of emotional contagion include personality factors (i.e., reactivity, emotionality, sensitivity to others), selfesteem, gender, social functioning, empathy, tendency to mimic others behavior (Doherty, 1997; Doherty, Orimoto, Singelis, Hatfield, & Hebb, 1995; Hatfield, Rapson, & Le, 2009), hypnotisability(Cardeña et al., 2009), burnout and depression (Petitta, Jiang, & Härtel, 2016; Siebert, Siebert, & Taylor-McLaughlin, 2007), and mild cognitive impairment (Petitta et al., 2016; Sturm et al., 2013). Especially germane to this study is the association of emotional contagion with mass hysteria. However, although, emotional contagion has been implicated in mass hysteria or "madness of crowds" phenomena and other group processes (Barsade, 2002; Dezecache et al., 2013; Hatfield, Carpenter, & Rapson, 2014), to our knowledge, no formal study assessing the association between emotional contagion and mass hysteria in a real-world setting exists in the literature. Very little is known about transfer of emotions beyond dyadic transfer (Barsade, 2002; Dezecache et al., 2013; Hatfield et al., 2014).

The *Cognitive Failures Questionnaire* (CFQ) (Broadbent, Cooper, FitzGerald, & Parkes, 1982) is a 25-item self-report inventory that assesses an individual's tendency to failures in ordinary memory, perception, and motor function in everyday life (Broadbent et al., 1982; Wagle, Berrios, & Ho, 1999). Examples of CFQ items include: *Do you find you forget why you went from one part of the house to the other?* and *Do you fail to notice signposts on the road?* Respondents rate each item on a 5-point Likert-type scale of frequency over the last 6 months

(Wallace, Kass, & Stanny, 2002). The total score is obtained by summing responses on all the items. The higher the score, the more prone the individual is to making cognitive errors in day-to-day functioning. Originally developed as an indicator of general disturbances in cognitive control, CFQ has been interpreted as a measure of a single, trait-like cognitive phenomenon (Broadbent et al., 1982; Bruce, Ray, & Carlson, 2007). The CFQ has been used with adolescents as young as 13 years old (Boomsma, 1998; Bruce et al., 2007; Giesbrecht et al., 2007; Merckelbach et al., 1999). Some of the identified correlates of CFQ that are of interest for this study include dissociation (Bruce et al., 2007; Merckelbach et al., 1999; D. Wright & Osborne, 2005), daytime sleepiness and boredom proneness (Wallace, Vodanovich, & Restino, 2003), fantasy proneness (Giesbrecht et al., 2007), and stress and related mental health problems (i.e., anxiety, depression, PTSD)(Boals & Banks, 2012; Broadbent et al., 1982; Carrigan & Barkus, 2016b).

The Comprehensive Quality of Life–School Version (ComQol-S5) (Cummins, 1997) is a general measure of quality of life in children and adolescents 11-18 years of age (Wallander, Schmitt, & Koot, 2001). In addition to questions on demographic information, ComQol-S5 includes a 35-item self-report scale that assesses objective and subjective dimensions of quality of life in seven domains: material well-being; health; productivity; intimacy; safety; place in the community (social well-being); and emotional well-being (Cummins, 1997; Gullone & Cummins, 1999). The objective dimension includes 21 items covering the 7 domains with three items each. The subjective dimension has 14 questions: 7 questions are related to satisfaction on each of the above domains and 7 items rate the importance of that domain. For example, one of the items in the objective dimension of the health domain is *How many times have you visited a doctor in the past three months?* The importance item related to health domain is *How important to you is your*

health? and the satisfaction item related to health domain is *How satisfied are you with your health?* To assess the objective dimension, respondents are asked to rate statements on a 5-point Likert-type scale; the subjective items are rated on a 7-point Likert-type scale. Total score for the objective dimension is obtained by summing the response on 21 items, while total score for the subjective dimension (importance and satisfaction) and the final score, known as "percent scale maximum" is obtained by using a complicated algorithm outlined by Cummins (1997) (see: Gullone & Cummins, 1999). In this study, only the 21 items of the objective dimension (7 domains) were used in the final analysis.

The *Depression Self-Rating Scale* (DSRS) (Birleson, 1981) is an 18-item self-report measure of depressive symptoms designed for children and adolescents that has been used in a variety of cross-cultural contexts (Kohrt et al., 2011; Ventevogel, Komproe, Jordans, Feo, & De Jong, 2014). The DSRS records symptoms over the past week. Items are presented as statements, for example: *I sleep very well, I feel like crying*. Responses include: 0 "mostly", 1 "sometimes", and 2 "never". Total score is computed as a sum of responses to all the items. The DSRS has been validated for use in Nepal by Kohrt et al. (2011) using the method of cross-cultural translation and adaptation of instruments outlined by van Ommeren and colleagues (1997). Kohrt et al. (2011) validated the DSRS through a survey of 162 children of 11-14 years of age. The scale had acceptable psychometric properties (i.e., sensitivity = 0.71, specificity = 0.81, cutoff score \geq 14; internal reliability (Cronbach's alpha) = 0.67, and test-retest reliability = 0.80). Of note, a lay psychosocial counsellor with six-months of training was used as a rater in the validation study to identify depression caseness.

The Brief *Childhood Trauma Questionnaire* (CTQ) (D. P. Bernstein et al., 2003) is a 28item (25 clinical items and 3 validity items) version of the original 70-item Childhood Trauma Questionnaire (D. P. Bernstein et al., 2003). It allows retrospective identification of the prevalence of child abuse and neglect among adolescents and adults. Respondents are asked about experiences in childhood and adolescence using a 5-point Likert-type scale with response options ranging from "Never True" (1) to "Very Often True" (5). The CTQ has five clinical scales: *physical abuse* (e.g., Got hit so hard that I had to see a doctor or go to the hospital); *sexual abuse* (e.g., *Someone molested me*); *emotional abuse* (e.g., *People in my family called me stupid, lazy, or ugly*); and *physical neglect* (e.g., *I didn't have enough to eat*;) and *emotional neglect* (e.g., *I felt loved [reverse score]*) (Bernstein, et al., 2003). The CTQ has been used among adolescent and youth populations (aged 12 - 26 years) (D. P. Bernstein, Ahluvalia, Pogge, & Handelsman, 1997). The Brief CTQ was previously translated following a transcultural translation procedure (Van Ommeren et al., 1999) and used in Nepal with adults (Kohrt et al., 2011; Kohrt et al., 2015), but the psychometric properties of the scale were not reported by these authors.

The *Child PTSD Symptom Scale* (CPSS) (Foa, Johnson, Feeny, & Treadwell, 2001) was developed as a child-version of the Posttraumatic Diagnostic Scale (Foa et al., 2001). The CPSS has two parts: The first part contains 17 items that correspond to the PTSD diagnostic criteria in DSM-IV; the second part includes 6 items related to impairment in functioning. Items are presented as statements, for example: *Having bad dreams or nightmares* and *Having trouble falling or staying asleep*. Items are scored on a scale of 0-4 based on frequency of experience over the past week, where 0 represents "not at all" and 4 "almost always." Only the first part (17-items) of the scale was used in the present study. This instrument has also been validated and previously used in Nepal with children (Kohrt et al., 2011). The scale had acceptable psychometric properties (i.e., sensitivity = 0.68, specificity = 0.73, cutoff score ≥ 20; internal

reliability = 0.86 and test-retest reliability = 0.85). A lay psychosocial counsellor with six months of training was used as a rater in the validation study to identify PTSD caseness.

3.2.3 Procedure

3.2.3.1 *Instrument translation and adaptation*

English-language instruments were translated and adapted following the widely used approach developed by Van Ommeren and colleagues (1999) based on earlier work by Brislin (1970; (see: Kaiser, Kohrt, Keys, Khoury, & Brewster, 2013; Kohrt et al., 2011; Kohrt, Luitel, Acharya, & Jordans, 2016). In this approach equivalence of the items of the translated instrument is evaluated on comprehensibility, acceptability, relevance and completeness in the following steps: (1) translation by bilingual speakers; (2) review by mental health workers; (3) focus group discussion with the population of interest (i.e., children in this study); (4) blind back-translation; and (5) examination of original translation and blind back-translation to resolve discrepancies (Van Ommeren et al., 1999). Here, we summarize the specific steps taken for translation and adaptation of the instruments used in this study.

In the first step, two Nepali Social Work graduates working as professional translators in Nepal performed the translation of the instruments. These translators have extensive experience in translating terminology related to psychosocial and mental health and psychometric measures from English to Nepali and vice versa. In the second step, two experienced Nepali psychosocial counsellors and a psychologist together reviewed the translated instruments. The counsellors were coached and instructed to appraise the instruments on comprehensibility of the language used and acceptability of the items and the response set (i.e., yes/no, Likert-type) for each item, as well as the meaning and relevance of the questions in the local culture. The instrument was then revised

by the investigator based on their recommendations. Third, a focus group discussion about the instruments was conducted in Dang district with four children (two boys and two girls) aged twelve to fifteen years. The instruments were further modified based on the suggestions of the children. In the fourth step, two translators reviewed the Nepali instruments and translated them back into English. The translators were unfamiliar with the original English version of the instruments. In the fifth step, a native English speaking graduate student with good knowledge of spoken Nepali and past experience with ethnographic research on mental health in Nepal compared the backtranslations with original English items to identify any errors in translation or misunderstanding of English idioms by the Nepali translators. In the sixth step, to evaluated the completeness of the translations issues identified by the native English speaker, the mental health workers, and the children in the focus group discussion were reviewed by a team comprising two translators, a native English speaker, and a Nepali psychologist. The team also reviewed the previously translated instruments (i.e., CTQ, DSRS, CPSS). Some issues raised in the previous steps could not be resolved through discussion among the team (i.e., What to do with the items identified as irrelevant for the rural contexts? What to do with items related to sexual abuse [e.g., Someone tried to make me do/watch sexual things]?). To address these issues, four additional focus group discussions with 16 children (8 boys and 8 girls) aged 12 to 17 years were conducted in a residential school setting in Bhaktapur district. Based on the information from these focus groups instruments were revised and finalized. The translation and adaptation process was completed over a period of one year (from July 2014 to August 2015).

3.2.3.2. Training of interviewers

Five research assistants and a researcher conducted the interviews. Three experienced interviewers with graduate level education from Kathmandu and one from Dang with at least intermediate levels of education and previous experience with survey research were selected and given a half-day orientation training followed by supervised practice in the field for five days. Training was focused on familiarizing the experienced interviewers on the study procedure, instruments and scoring, informed consent and assent, inclusion and exclusion criteria. One graduate student, also from Dang, was selected as a full-time research assistant and trained for two weeks. Training included the following: study procedure, instruments and scoring, inclusion and exclusion criteria, ethical considerations, informed consent and assent, rapport building and interviewing with practice through role-playing.

3.2.3.3. Participant recruitment

The cross-sectional survey with school children was conducted from August to October 2015. All the students of seventh to tenth grades present in the school on the day of the data collection were invited to participate in the survey. The interviewers explained the study to potential candidates in each of the selected classrooms, including the inclusion/exclusion criteria: (1) 11 to 18 years of age, (2) never affected by *chopne* (the general term in Nepali for trance and possession states); and (3) not suffering from epilepsy (*chhare rog*) or other severe ailments (as defined by the student). Students who thought they met the study criteria were divided into segregated groups of boys and girls.

To ensure the quality of data collection, smaller groups constituting four to five participants were formed for younger children aged 11 to 14 years and of seven to ten children

for older children aged 15 to 18 years groups. Although students could respond to the self-report measures, an interviewer was present at each group to explain the procedure and clarify questions. At the start of the group interview, the interviewer familiarized the group with the types of questions, response categories, and how to mark responses on the questionnaire. The interviewer also instructed the group on what to do if they did not understand the question (i.e., "Raise your hand and I will come to you to clarify"). Participants then were asked to provide informed assent. Thereafter, for the groups of younger children the interviewer read the instructions and the questions of each instruments except for the five questions on sexual abuse in the childhood trauma questionnaire. Considering the possibility of making children uncomfortable by talking about a taboo issue in the group setting (Kohrt et al., 2015; Van Ommeren et al., 1999), children were asked to read and respond to sexual abuse related questions. Older children aged 15 and older were allowed to read and respond on their own in the presence of the interviewer. Each interview lasted approximately 90 minutes.

3.2.3.4 Test-retest reliability

To assess the test-retest reliability of the measures over time, all the instruments were readministered to 56 children (18 boys; 38 girls) aged 13 to 17 years of age in a school in Dang district after a two-week interval.

3.2.4 Data analysis

Data were analyzed using IBM SPSS Statistics 23.0 with essentials for R 23.0, and AMOS 22.0 software. We followed Tabachnick and Fidell's guidelines for cleaning and preparing the data for analysis (Tabachnick & Fidell, 2013). First, the SPSS data file was

checked for any inaccuracies in data entry through descriptive analysis (i.e., frequencies in SPSS) and the identified errors were corrected by examining the original files. In the second step, data were examined for missing values. We assessed the pattern of missing data to examine if the data were missing completely at random (MCAR) (Graham, 2009; Rubin & Little, 2002). Third, assumptions of multivariate analysis (i.e., normality, linearity, outliers etc.) were assessed and evaluated by using graphical and statistical methods. For example, normality was visually assessed using histogram and normal probability plot and statistically tested using skewness and kurtosis tests. Likewise, potential univariate outliers were examined using boxplot, z score values greater than 3.29 and Outlier Labeling Rule with tuning parameter (multiplier) k = 2.2 (Hoaglin & Iglewicz, 1987). Mahalanobis distance with the criteria of a p < .001 was calculated to identify potential multivariate outliers. The bivariate scatterplot and residual plot between all predictor variables (i.e., CTQ, CFQ, DSRS, ComQol, CEQ) and the dependent variable (i.e., A-DES) were examined for linearity and homoscedasticity (Breusch & Pagan, 1979). The Breusch-Pagan (BP) test of heteroscedasticity was performed. A non-significant BP test finding (i.e., p>.05) indicates homoscedasticity. Multicollinearity between the predictor variables was evaluated using tolerance and the Variance Inflation Factor (VIF). Subsequently, missing data were imputed using Maximum Likelihood (ML) based method of imputing missing values: Expectation Maximization (EM) algorithm.

Fourth, the descriptive statistics, including the frequency, percentage, mean and standard deviation were calculated for the socio-demographic, and all other psychometric scales to analyze the basic characteristics of these variables in the study. The Pearson product-moment correlation coefficient (r) was calculated to determine the strength of the linear relation between two interval variables (i.e., all psychological predictors and their subscales with ADES) while

point biserial correlation (r_{pb}) was computed when one variable was categorical (i.e., gender and A-DES). Internal consistency (a form of reliability) of the psychometric scales was measured with Cronbach's alpha (α) and relative consistency of these measures over time (test-retest reliability) was assessed with Intraclass Correlation Coefficients (ICC) by using a two-way mixed effects consistency model. Psychometric scales with at least modest internal consistency and test-retest reliability scores (i.e., both Cronbach's α and ICC > 0.7) and subscales with α > .50 were used in the final analysis (D. V. Cicchetti, 1994; Lance, Butts, & Michels, 2006).

Fifth, principal component analysis (PCA) was performed when composite variables were to be constructed using subset of items of a scale and when indicator variables in the path model were to be reduced to a latent variable. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy, p >0.50 and Bartlett's test of sphericity with a p value < .001 were used to assess if the items or indicator variables were appropriate for reduction (Jolliffe, 2002; Tabachnick & Fidell, 2013).

Next, given that this study aimed 1) to appraise various existing theoretical models of dissociative experience in the "healthy" adolescent population, and 2) to develop a model that can be applied and tested in the adolescent population affected by mass psychogenic illness, the relationships between childhood trauma, distress factors and cognitive and personality factors and dissociative experience were tested using separate path models. Then, observed variable path models were sequentially merged into a single model to obtain the hypothesized model and to examine if the effect of childhood trauma on dissociation is mediated by the distress factors and/or by the cognitive and personality factors. Subsequently, exploratory path analysis was performed to obtain a complete picture of the possible pathways from childhood trauma to dissociation. In the final model, all the study variables were included. Using the specification

search feature in AMOS, a best fitting alternate model was generated (Byrne, 2010; Schumacker & Lomax, 2016).

The maximum likelihood method was used to estimate the models. In line with the recommendations made by Hu and Bentler (1999) and Goodboy and Kline (2017), model fit was assessed and interpreted using the following fit indices: 1) Chi square (χ^2) goodness-of-fit statistics – a statistically non-significant χ^2 test result (i.e., p < .05) indicates overall model fit and the associated degrees of freedom (i.e., $df \ge 0$) imply that the model was identified. Overidentified models (i.e., df > 1) are desired in a path analysis; 2) Comparative Fit Index (CFI) values range from 0 to 1 and a value of CFI ≥ 0.95 is indicative of good fit; 3) Root Mean Square Error of Approximation (RMSEA) values range from 0 to 1 and a value of RMSEA < 0.06 indicates a good fit; 4) Standardized root mean square residual (SRMR) values range from 0 to 1 and a value of SRMR < 0.08 is considered a good fit (Goodboy & Kline, 2017; Hooper, Coughlan, & Mullen, 2008; Hu & Bentler, 1999; Kline, 2016).

3.2.5 Ethical considerations

The Research Ethics Committee of the Jewish General Hospital, Montreal Canada, provided ethical approval for this study. No financial support was provided to the participants. Snacks were provided to each participant after the interview. In cases where it was not feasible to provide snacks each participant was given 50 Nepalese Rupees (equivalent to US \$0.50) to buy the snacks.

Prior to administering the survey, principals of the selected schools as well as some teachers and administrative staff were informed about the study. Based on the informed consent form, details of the study including possible risks and benefits of participating in the study were

discussed. Since it was not logistically possible to invite all the parents of the potentially participating students, the school principal and a class teacher or an administrative staff agreed to sign the consent forms of the students. Both the principal of the school as a guardian and the class teacher or an administrative staff as a witness provided written consent on the day of the survey. Students themselves provided informed assent. This is common practice in research studies in Nepal (Kohrt et al., 2011; Regmi et al., 2016).

3.3 Results

3.3.1 Instruments translation and adaptation

During the systematic translation process (Kohrt et al., 2011; Kohrt et al., 2016; Van Ommeren et al., 1999) several challenges were faced and numerous adaptations were made in the instruments. Some illustrative examples are summarized here.

In ComQol-S5, one of the items (i.e., *If either of your parents has paid work, please give the name of their job)* under the sub-scale material wellbeing is used to estimate the annual family income based on the type of the job the parents have (i.e., student, labourer, paraprofessional, professional etc.). However, in the context of Nepal except for government jobs, it is impossible to estimate annual income based on the type of work, so we added one question: "*How much access do you have to the following: Food related (food, water, fuel for cooking), clothes, medicine, entertainment related (electricity, radio, TV, telephone), commute related (bicycle, motorcycle)*" with three response options for each: 0=none, 1=a little, and 2=always. Total score for this item was computed following the coding procedure outlined by Cummins (1997) for ComQol-S5. First, each access item was separately calculated as 0.33 +

(0.33 x response on access item) so that each access item is scored to a maximum of 1. Second, since other items of ComQol are scored in a five-point scale, five access items were aggregated to obtain a maximum possible score of 5 for each individual.

Two items from the ECS were contextualized. Considering the common Nepali idiom "maan paglinchha" (heart melts), the item "I melt when the one I love holds me close" was changed to "my heart melts when the one I love holds me close." Likewise, considering the fact that there are no dentists in rural areas of Nepal and going to a dentist is not a common practice, it is very unlikely that the research participants will have faced such a situation, the item "listening to the shrill screams of a terrified child in a dentist's waiting room makes me feel nervous" was modified to "listening to the screams of a terrified child makes me feel nervous."

In this study, we hypothesized that childhood trauma, including sexual abuse, would be one of the correlates of dissociative experience. However, the measurement of exposure to childhood sexual abuse posed a particular challenge. Previous researchers have indicated that it is unacceptable or offensive to ask sex related questions in Nepali context (Kohrt et al., 2011; Kohrt et al., 2016; Van Ommeren et al., 1999). Kohrt and colleagues put a note in the Nepali version of CTQ that the items related to sexual abuse (i.e., somebody molested me, someone used to ask me to do/watch sexual activities) are "culturally inappropriate for Nepali adults and adolescences" and recommend that researchers skip these items. However, the current trauma model of dissociation implicates childhood trauma including sexual abuse in dissociative experiences (Dalenberg et al., 2012; Putnam, 1993), and there is evidence from several studies in support of this association (Van IJzendoorn & Schuengel, 1996). Survey reports also show that childhood sexual abuse is widespread and steadily increasing in Nepal (UNICEF, 2005) and that many children are suffering in silence because of possible stigma (UNICEF, 2005). Hence, we decided it was important to ask

these questions. The challenge was to find a culturally appropriate and non-offensive way of asking them. To our surprise, however, children in most of the focus groups felt these questions were important to ask. Only one group of boys aged 12 to 14 said that it would be inappropriate to ask "such questions" (i.e., sex related) to children and added that children would not give "right answers" out of fear or shame; nonetheless, they acknowledged the importance of talking about sexual abuse with children. Other groups also shared the concern that these questions may be humiliating for a child to answer openly but noted that it was necessary to ask about sexual abuse because this could help others to be aware about the issue. One group left the following note in the questionnaire:

"6These questions are good because many children do not know about 'social evils' and these kinds of 'social problems' and these questions will make them realize about it and maybe, help find a way to solve them,"

Children in the focus groups suggested following a gender-sensitive strategy, having a man ask these questions with boys and a woman with girls in a private setting or having the children read and respond to these questions on their own. Since the interviews were to be conducted in small groups, the first option was not feasible and we followed the second strategy and allowed the children to read and respond to these questions on their own. Of note, 35 percent of the children in this study scored positive for at least one of the sexual abuse related items.

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⁶ This quote was translated from Nepali but the children had written the terms "social evils" and "social problems" in English.

Some translation issues remained unresolved. We identified that some of the items were only relevant for urban areas and not for the rural areas but given the lack of alternatives with similar conceptual equivalence, some items were left unchanged. For example, mental health workers noted that the items related to leisure activities done for pleasure in ComQol-S5 such as eat out, go to a movie, would not be relevant in rural areas because there are no restaurants or movie theatres and it is not a common practice to invite people for launch or dinner except during festivals. Moreover, eating outside of the house may be considered a moral transgression for traditional families and some caste groups in Nepal. Another item in ComQol-S5, "On average, how many hours TV do you watch each day?", assumes that the child has access to TV but this is not the case for the majority of children in the rural areas of Nepal. In 2011, only 30 percent of rural households had access to TV (Central Bureau of Statistics, 2012). Likewise, the item in CFQ, "Do you fail to notice signposts on the road?," was understandable to the children but not relevant for children in rural areas where there are no roads with signposts.

3.3.2 Preliminary analysis and socio-demographic characteristics

Analysis of missing data patterns (i.e., using analyze patterns function in SPSS) showed that less than four percent (i.e., 3.75 %) of the data were missing and 104 (33.12%) cases had at least one missing value. Therefore, despite the low overall rate of missing data, cases with missing values could not be deleted. Substantial "power" would be lost if the traditional methods (i.e., listwise or pairwise deletion options in SPSS) of dealing with missing values were used (Graham, 2009). Since all the main variables were approximately normally distributed, no potential univariate or multivariate outliers were detected, and the overall missing percent was low (less than 4 %). Further, nonsignificant Little's MCAR test ($\chi^2 = 1729$, df= 1666, p = .138)

showed that the data were missing completely at random (MCAR). The Breusch-Pagan (BP) test of heteroscedasticity was also nonsignificant (χ^2 =0.894, df= 1, p = .344). Under aforementioned conditions, the maximum likelihood based single imputation using the EM algorithm provides unbiased parameter estimates (Acock, 2012; Allison, 2012; Dempster, Laird, & Rubin, 1977; Enders, 2010; Graham, 2009; Little & Rubin, 2002; Rubin & Little, 2002). Hence, missing data were imputed using EM algorithm.

Two variables deviating from normality were transformed. The sexual abuse subscale was substantially positively skewed (skewness = 2.271 and kurtosis = 4.776), so logarithmic transformation was applied, whereas in the case of the dissociative experience scale, which was slightly positively skewed (skewness = 0.71 and kurtosis = 0.22), a square root-transformation was applied (Hair, Black, Babin, & Anderson, 2014; Tabachnick & Fidell, 2013).

Table 1, displays the socio-demographic characteristics of the research participants. A total of 314 adolescents aged 11 – 18 years (M=14.24; SD = 1.68) participated in the study. Almost equal numbers of children participated from rural (48.7%) and urban (51.3%) areas. Two schools from Dang district (40.7%) and one school from Gulmi district (8.0%) represent rural areas while two schools from Kathmandu district (51.3%) represent the urban setting. Representation of castes/ethnicities, religions, and mother-tongues in the sample was comparable to Nepal's national averages (Central Bureau of Statistics, 2012). Descriptive analysis showed that 29% respondents scored above the cutoff criteria (i.e., 3.70) that is indicative of significant dissociation (Armstrong et al., 1997).

 Table 3: Socio-Demographic Characteristics of Research Participants

		Frequency(%)	Mean (SD)
Age group	11 - 14 years	181 (57.6)	13.2 (1.03)
	15 - 18 years	133(42.4)	16.5(0.93)
		Frequency	Percent
Gender	Boys	127	40.4
	Girls	187	59.6
District	Dang & Gulmi (rural area)	153	48.7
	Kathmandu (urban area)	161	51.3
Level of education	Lower Secondary	153	48.7
	Higher Secondary	161	51.3
Caste/Ethnicity	Brahmin	31	9.8
	Chhetri	71	22.6
	Dalit	42	13.4
	Janajati	117	37.3
	Newar	14	4.5
	Chaudhary	39	12.4
Religion	Hindu	256	81.5
	Boudhist	36	11.5
	Others (Muslim, Christian)	22	7.0
Mother tongue	Nepali	243	77.4
	Magar	12	3.8
	Tamang	25	8.0
	Chaudhary	32	10.2
	Others	2	0.6
Marital status	Unmarried	306	97.5
	Married	8	2.5
Child-perceived	Lower Class	88	28
SES	Middle Class	207	65.9
	High Class	19	6.1
Family occupation	Agriculture	142	45.2
	Job	35	11.1
	Business	58	18.5
	Working abroad	59	18.8
	Others	20	6.4
Type of the family	Nuclear	165	52.5
	Joint	149	47.5
Residence	Own House	168	53.5
	Rent & relatives	146	46.5

3.3.3 Psychometric properties of the instruments

Descriptive statistics and psychometric properties of the scales used in this study are summarized in Table 2. All the scales except for DSRS had good to excellent alpha and ICC values, indicating modest to high levels of internal consistency and test-retest reliability, respectively. All the scales had skewness and kurtosis scores within the acceptable range of approximate normality (i.e., skewness and kurtosis less than +1 and greater than -1) (Hair et al., 2014; Tabachnick & Fidell, 2013).

 Table 4: Descriptive and Psychometric Statistics of Measures

Instruments	Items (Range)	Mean	SD	Skew	Kurt.	α	ICC	CI (95%)	p.
ComQol	35 (35 -203)	132	10.63	-0.41	0.18	.74	.82	.6890	.001
ADES	30 (0-300)	2.80	1.69	0.71	0.22	.94	.89	.7993	.001
CEQ	25 (0-25)	11.79	4.31	-0.06	0.16	.74	.87	.7692	.001
CFQ	25 (0-100)	42.65	14.23	-0.1	0.28	.86	.72	.5084	.001
ECS	15 (15-60)	36.71	7.32	0.2	0.11	.77	.76	.5786	.001
DSRS	18 (0-36)	13.75	3.74	0.21	1.05	.55	.51	.1671	.01
CPSS	17 (0-51)	20.39	7.5	0.37	0.36	.84	.83	.7090	.001
CTQ	30 (0-120)	33.68	16.1	0.1	-0.94	.88	.82	.6890	.001

ComQol = Comprehensive Quality of Life –S5; ADES = Adolescent Dissociative Experience Scale; CEQ = Creative Experience Questionnaire; CFQ = Cognitive Failures Questionnaire; ECS = Emotional Contagion Scale; DSRS = Depression Self-Rating Scale; CPSS = Child PTSD Symptom Scale; CTQ = Childhood Trauma Questionnaire; SD = Standard Deviation; α = Cronbach's alpha; ICC = Intra-class Correlation Coefficient; CI = Confidence Interval

3.3.4 Principal Component Analysis (PCA)

As is apparent in Table 2, the Depression Self-Rating Scale (DSRS) had a low internal consistency as well as a low test-retest reliability. In a research context, the generally accepted lower bound threshold for internal consistency coefficient and intra-class correlation coefficient of an instrument is .70. Reliability coefficients < .60 and < .50 indicate poor and unacceptable

reliability, respectively (D. V. Cicchetti, 1994; Gliem & Gliem, 2003; Groth-Marnat, 2003; Landis & Koch, 1977; McDowell, 2006; Nunnally & Bernstein, 1994). Poor reliability of the instrument attenuates measurement accuracy (Furr & Bacharach, 2014), therefore, we decided to perform a PCA to explore if a subset of more reliable and meaningful composite variables could be constructed from DSRS for the subsequent analysis (Jolliffe, 2002). All the items with negative scoring were reverse coded before the analysis. First, prerequisites for PCA were assessed. Although, none of the inter-item correlation coefficients were greater than .3 (several items had a correlation coefficient \geq .2), the Kaiser-Meyer-Olkin measure of sampling adequacy was .65, Bartlett's test of sphericity was significant ($\chi 2$ (153) = 397.46, p < .001), the diagonals of the anti-image correlation matrix were all over .5 except for an item DSRS5 (I feel like running away), and the communalities were all above .37 indicting that the variables met the criteria for PCA (Tabachnick & Fidell, 2013; Thompson, 2004). Second, PCA was performed including all 18 DSRS items for a sample of 314 adolescents. Since there was no predetermined hypothesis on the number of components to be extracted, an eigenvalue of 1.0 was used to determine the number of components.

Possible numbers of components were estimated through principal components extraction with both varimax and direct oblimin rotations and Kaiser normalization. Both varimax and direct oblimin rotations produced similar results and when direct oblimin rotation was used the correlations between extracted components were low (< .2). Thus, only varimax rotation was used in the subsequent analysis. Initial extraction produced seven components with eigenvalue greater than 1. Seven components together explained 54.21% of the total variance. However, examination of the scree plot and Monte Carlo parallel analysis, using software developed by Watkins (Watkins, 2000), showed that only a two-component solution would be appropriate.

Therefore, two fixed components were extracted using principal components with varimax rotation. The two-component solution explained 22.9 % of the variance, the first and the second component each contributing 12.24% and 10.67%, respectively. Variables loadings with absolute values of .45 and cross loadings with absolute values of less than .3 were retained for each component (Tabachnick & Fidell, 2013). The first component constituted five depressive symptoms (I feel so sad I can hardly stand it, I think life isn't worth living, I feel very lonely, I feel very bored, I feel like crying) and the second component contained four items related to positive affect or self-contentedness (I am good at the things I do, I enjoy my food, I enjoy the things I do as much as I used to, I can stick up for myself). Composite scores for these two components were calculated. There was no significant correlation between first and second components (r = .03, p = .60). Internal consistency measured with Cronbach's alpha was .50 for the first component and .41 for the second component. SPSS analysis further revealed that there would be no substantial increase in alpha for any of the components after eliminating one or more corresponding items. Of note, when Kohrt and colleagues (2011) conducted a validation study of DSRS in Nepal, the internal consistency of DSRS was .67 and test-retest reliability was .86 for the study sample.

The score range for 21 objective items in the original ComQol-S5 scale is 1-105. Since the scoring of some of the items was adapted, the range is 1-95 in this study. Only the subscales with internal consistency, $\alpha > .5$ were used in the final analysis. Therefore, the statistics for other subscales are not included in the Table 3. All the subscales included in the final analysis except for sexual abuse were approximately normally distributed. After the logarithmic transformation, skewness and kurtosis of sexual abuse subscale were reduced to 1.26 and 0.20, respectively.

Table 3: Descriptive and Psychometric Statistics of the Subscales of ComQol-S5, CTQ and DSRS Included in the Path Analysis

	Items		CD.	C1	T7.	
Subscales	(Range)	Mean	SD	Skew	Kurt.	α
Sexual Abuse (CTQ)	5 (0 - 20)	1.64	3.16	2.29	4.92	.85
Emotional Abuse (CTQ)	5 (0 - 20)	5.16	4.07	0.64	-0.63	.71
Physical Abuse (CTQ)	5 (0 - 20)	5.19	4.13	0.68	-0.36	.72
Depressive Symptoms (DSRS)	5 (0 - 10)	4.52	1.81	0.16	0.26	.50
Quality of life (ComQol_O)	21 (1 - 95)	65.77	4.60	-0.27	-0.23	.56

 $ComQol\ O = Comprehensive\ Quality\ of\ Life\ Subscale\ with\ 21\ objective\ items$

3.3.5 Correlations Between Variables in the Path Analysis

Table 4 displays the correlation matrix for all variables included in the path analysis. Economic variables (i.e., access to materials, perceived family economic status, having own house, family occupation) and socio-demographic variables (i.e., age, gender, caste/ethnicity, mother tongue, level of education, marital status) were not included in the matrix because these variables were not significantly associated with DEBs. Likewise, the other subscales of CTQ (Emotional neglect and Physical neglect) and of ComQol (i.e., Intimacy, Safety, Material wellbeing etc.) were not significantly associated with DEBs. However, although the ComQol subscales Emotional wellbeing, Health, and Place in the community (Social wellbeing) significantly correlated with DEBs, they were not included in the final analysis because of their very low internal consistency (i.e., $\alpha < .4$). All variables except depressive symptoms and quality of life were significantly positively associated with dissociative experience.

Table 4: Pearson Product-Moment Correlation Coefficients Between Variables Included in the Path Analysis

Variables	DE	FP	EC	CF	PTS	SA	EA	PA	DS	QoL	СТ
Dissociation (DE)											
Fantasy proneness (FP)	.285 *	*									
Emotional contagion (EC)	.241 *	* .483 *	*								
Cognitive Failures (CF)	.530 *	* .448 *	* .500 *	*							
Posttraumatic stress (PTS)	.393 *	* .401 *	* .328 *	* .472 *	*						
Sexual abuse (SA)	.123 *	n.s.	n.s.	.161 *	* .123						
Emotional abuse(EA)	.213 *	* .162 *	* n.s.	.356 *	* .564	* .311 *	**				
Physical abuse(PA)	.290 *	* .279 *	* n.s.	.382 *	* .598	* .309 *	* .732 *	*			
Depressive symptoms(DS)	n.s.	.133 *	.148 *	* .138	* .239 *	* n.s.	n.s.	.116	*		
Quality of Life (QoL)	n.s.	n.s.	n.s.	n.s.	112	* n.s.	n.s.	n.s.	249	**	
Childhood trauma(CT)	.211 *	* .124 *	n.s.	.328 *	* .489	* .496 *	* .825 *	* .769 ·	** .137	*137	*
** p < 0.01 * p < 0.05.											

3.3.6 Path Analysis

An observed variable path analysis as well as a latent variable path analysis was performed to test if the existing theories of dissociative experience are applicable to the current study sample. Simple regression-based path analysis (observed variable path analysis) does not consider measurement errors. To obtain more accurate measures of the relationships between the variables in the model, a latent variable path analysis was also conducted using the same variables in each path model as indictors of the latent factor (Byrne, 2010; Kline, 2016).

All models were tested using the maximum likelihood (ML) method. Since, ML method assumes multivariate normality of the variables in the analysis, Mardia's coefficient of multivariate kurtosis was examined for all the models. Although no clear consensus exists, Mardia's multivariate kurtosis value > 5 (outputted as C.R. value in AMOS test of normality) was considered indicative of departure from multivariate normality (Byrne, 2010; Kline, 2016).

The values shown in the path diagrams are standardized coefficients and the alphabet e denotes error term. Table 5 displays the model-fit indices for final Model 1 to Model 3. Statistically significant paths are represented with a solid path arrow and nonsignificant paths are

indicated with a faded arrow in the path models.

3.3.6.1 Preliminary analysis: Model specification and identification

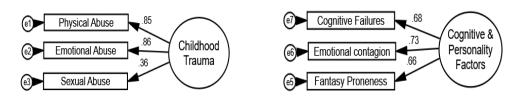
First, all the observed variable path models were specified (see Figure 3, Models 1a, 2 and 3a) based on the existing theories of the correlates of dissociation. Model 1a tested the association between dissociation and childhood trauma, which was represented by three abuse subscales (i.e., sexual abuse, emotional abuse and physical abuse) from the Childhood Trauma Questionnaire. Model 2 examined the relationship between dissociation and distress factors, which included the measures of quality of life, depressive symptoms (subscale of the DSRS obtained through PCA) and posttraumatic stress symptoms. Model 3a tested the effects of cognitive and personality trait factors (CPFs), that is, cognitive failures, emotional contagion and fantasy proneness on dissociative experience.

All the specified path models were just-identified (i.e., degrees of freedom [df] = 0), which may indicate perfect fit; however, this could not be tested since the model was saturated (Bowen & Guo, 2011; Goodboy & Kline, 2017; David A. Kenny, 2015). Thus, to calculate appropriate fit indices for the specified models, nonsignificant paths were trimmed (indicated with faded arrows in the path diagrams; see: Models, 1a, 2 and 3a). The model fit-indices presented in Table 5 are for the trimmed models. Next, to perform the latent variable path analysis, two reflective measurement models were specified based on the path models (see: Models, 1a and 3a). Since the quality of life variable, one of the indicators of distress factor, was negatively correlated with other indicators of distress factor, a reflective measurement model for distress factor could not be specified. Although it is theoretically plausible that the higher one's quality of life, the lower are one's chances of having depression, this violates the assumptions of

a reflective measurement model (i.e., that all the indicators of the same factor in a reflective measurement model are positively intercorrelated) (Kline, 2016; Schumacker & Lomax, 2016).

Measurement models were tested prior to the analysis to assess if the specified indicator variables meaningfully converge to a single construct, the latent variable (Goodboy & Kline, 2017; David A. Kenny, 2016; Kline, 2016; McDonald & Ho, 2002; Schumacker & Lomax, 2016). Principal component analysis (PCA) was performed using three indicator variables of each measurement model. PCA using principal components extraction shows that sexual abuse, physical abuse, and emotional abuse converged to produce a single component, which explained 64% of the total variance. The Bartlett test (p < .001) and the sampling adequacy index, KMO = .580, showed that the reduction was appropriate. Variable loadings (ranging from .34 to .75; p < .001) indicated that each variable substantially contributes to the latent variable, childhood trauma (see Figure 2, Measurement Model A). Likewise, cognitive failures, emotional contagion and fantasy proneness loaded on one common component, which explained 65% of the total variance. Each variable significantly contributed to the latent variable, cognitive and personality factors (loadings: .63 - .78; p < .001; Bartlett test: p< .001; KMO = .683; see Figure 2, Measurement Model B). Both measurement models were just-identified (df = 0).

Figure 2: Measurement Models for Latent Variables Childhood Trauma and Personality Factors



Measurement Model A

Measurement Model B

3.3.6.2 Final analysis: Observed variable and latent variable path models

Model 1 tested if childhood trauma (i.e., sexual abuse, physical abuse and emotional abuse) predicts DEBs (see Model 1a and 1b). The multivariate kurtosis value of -.006 showed that the variables in the model were multivariate normal. Model fit indices for both path models, observed variable (1a) after trimming of the non-significant paths, and latent variable (1b) had an excellent fit (see Table 5). Model 1a and Model 1b each explained 9% of the variance on dissociative experience.

Figure 3: Observed variable (1a) and latent variable (1b) path diagrams showing association between childhood trauma and dissociative experience.

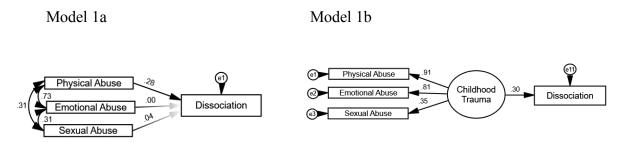
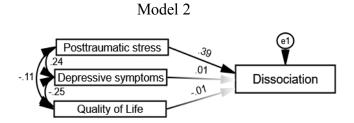


Figure 4: Observed variable path diagram (Model 2) showing association between distress factors and dissociative experience.

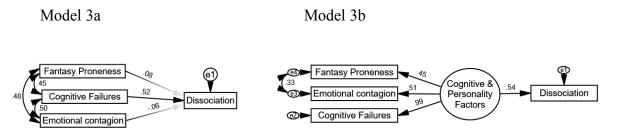


Model 2, examined whether distress factors (i.e., quality of life, posttraumatic stress and depressive symptoms) had a significant effect on dissociative experience. The multivariate kurtosis score of 2.36 indicated that the variables in the model were within the range of

approximate multivariate normality. Model fit indices for Model 2 were excellent after deleting the non-significant paths (see Table 5).

Model 3, examined the effects of CPFs (i.e., cognitive failures, fantasy proneness, and emotional contagion) on dissociation (see Model 3a and 3b). The multivariate kurtosis score of 1.59 indicated approximate multivariate normality. Model fit indices for model 3a were excellent after deleting the non-significant paths (see Table 5). Specified latent variable model (3b) showed a poor fit ($\chi^2(2) = 27.9$, p < .001, $\chi^2/df = 13.96$, CFI = .91; RMSEA = .204 and SRMR = .059). Modification indices suggested a correlation between the error variance of fantasy proneness (e4) and of emotional contagion (e3). Considering the fact that these variables represent the same latent construct (i.e., within factor variables), error variance e3 and e4 were allowed to correlate. After this modification, the model explained 29 percent of the variance on dissociative experience and showed an excellent fit (see Table 5).

Figure 5: Observed (3a) and latent variable (3b) path diagrams showing association between CPFs and dissociative experience.



Path analysis confirms the association of DEBs with childhood trauma, distress factors and CPFs, which in turn confirms that the existing theories of dissociation are applicable to the current study sample.

Table 5: Model-fit Indices for Model 1 to Model 3.

	χ^2	df	р	CFI	RMSEA	90% CI	SRMR
Model 1a	2.44	2	.29	0.99	0.026	.0011	0.014
Model 1b	2.44	2	.29	0.99	0.026	.0011	0.014
Model 2	0.09	2	.95	1.00	0.000	.0000	0.005
Model 3a	2.32	2	.31	0.99	0.022	.0011	0.017
Model 3b	2.28	1	.13	0.99	0.064	.0017	0.016

 χ^2 = Chi square, df = degrees of freedom, CFI = Bentler's comparative fit index, RMSEA= root mean square error of approximation, CI = confidence interval, SRMR = standardized root mean residual.

3.3.6.3 Exploratory Path Analysis: Developing and testing an integrated model of dissociation

To make the model less complex, we have presented here the model that used childhood trauma as a single factor (25 items, which includes items from all the five subscales of childhood trauma). However, we also tested the model using the three subscales (i.e., sexual abuse, physical abuse, emotional abuse) used in model 1a and 1b. Model-fit indices were excellent ($\chi^2(23) = 22.3$, p = .499, $\chi^2/df = .97$, CFI = 1.00; RMSEA = .000 and SRMR = .034).

The hypothesized model was specified and tested through the following exploratory steps. First, the observed variable path Model 1a and Model 2 were merged and tested. Second, Model 1a and Model 3a were merged and tested. Third, the resulting path model after merging Models 1a and 2 and Models 1a and 3a were merged to obtain the hypothesized model. The hypothesized model, thus specified, was further modified to generate a final integrated model of dissociation. In each of the above steps, alternate models using reverse paths among the endogenous variables except for dissociation (an outcome variable in the model) were tested. For example, if the paths were drawn from quality of life to depression symptoms in one model, path arrows directed towards quality of life from depression symptoms were tested in the alternate model (Kline, 2016). Based on the examination of the parameter estimates and modification

indices, paths were replaced and nonsignificant paths were deleted. After respecifying the final integrated model (see: Model 4), we performed a specification search to explore if a better fitting model than the one we had generated could be specified. For the specification search, all paths in Model 4 were made optional. The search fitted 32,768 alternate models and the best fitting model produced was the same as Model 4. The Akaike Information Criterion (AIC) - a comparative measure of fit, chi-square difference test and the overall variance explained by the model, was used to decide among alternate models with good fit. When the chi-square difference test was not significant (i.e., p > 0.05), the model with lower AIC value, lower absolute chi-square value and higher degrees of freedom were considered (Bowen & Guo, 2011; David A. Kenny, 2015; Kline, 2016). Only the significant paths are shown in the path diagram (see: Model 4). Parameter estimates and standard errors for Model 4 are displayed in the Table 6.

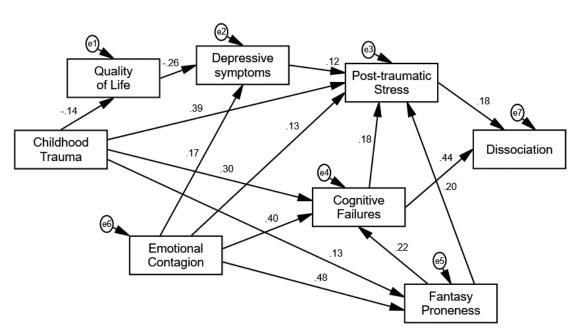


Figure 6: Integrated model of dissociation (Model 4)

The multivariate kurtosis score of 4.005 showed that the variables in the final model had approximate multivariate normality. Variance explained by the final model for each of the endogenous variables ranged from 2 % to 42%. The lowest percentage of variance explained by the model (R^2 = .02) was for quality of life and the highest (R^2 = .42) was for posttraumatic stress. The variance explained by the model for cognitive failures, fantasy proneness, depression and dissociation was 40%, 25%, 10% and 31%, respectively. Overall, 84% of the variance in the model was explained by the relations in the path model. All the path coefficients shown in the path model were significant (p<.05). The model had good model fit (χ 2(13) =12.95, p=.452, CFI = 1.00; RMSEA =.00 (90% CI = .00-.056; SRMR = .033).

Table 6: Parameter estimates for Model 4

					0 1	<u> </u>
Parameters			Unstandardized	SE	Critical	Sig.
			Estimate (β)		ratio (z)	(p)
Childhood trauma	->	Quality of life	-0.066	0.027	-2.449	.01
Childhood trauma	->	Fantasy proneness	0.042	0.016	2.569	.01
Childhood trauma	->	Depressive symptoms	0.014	0.008	1.911	.06
Childhood trauma	->	Cognitive failures	0.332	0.049	6.720	<.001
Childhood trauma	->	Dissociation	-0.007	0.012	-0.568	.57
Childhood trauma	->	Post-traumatic stress	0.227	0.027	8.366	<.001
Quality of life	->	Depressive symptoms	-0.073	0.016	-4.636	<.001
Emotional contagion	->	Cognitive failures	0.767	0.099	7.744	<.001
Emotional contagion	->	Fantasy proneness	0.284	0.029	9.872	<.001
Emotional contagion	->	Depressive symptoms	0.042	0.013	3.208	<.001
Emotional contagion	->	Post-traumatic stress	0.134	0.056	2.407	.02
Depressive symptoms	->	Cognitive failures	0.077	0.353	0.217	.83
Depressive symptoms	->	Post-traumatic stress	0.48	0.182	2.644	.01
Fantasy proneness	->	Post-traumatic stress	0.341	0.089	3.842	<.001
Fantasy proneness	->	Cognitive failures	0.724	0.168	4.315	<.001
Fantasy proneness	->	Dissociation	0.009	0.037	0.241	.81
Cognitive failures	->	Post-traumatic stress	0.092	0.029	3.15	<.001
Cognitive failures	->	Dissociation	0.09	0.012	7.759	<.001
Post-traumatic stress	->	Dissociation	0.075	0.023	3.211	<.001

3.3.7 Mediation analysis

The integrated path model showed that the effects of childhood trauma and all other variables on dissociation are mediated by posttraumatic stress (PTS) and cognitive failures variables. For example, Model 1 showed that childhood trauma had a significant direct effect on dissociative experience (β = .30, p = .001) but in the integrated model, the effect was reduced substantially and the path coefficient became nonsignificant (β = -.033, p = .542). Nonsignificant paths are not shown in the model. Hence, mediation was evident. However, from the path analysis we do not know which variable (i.e., PTS or cognitive failures) mediated the effect of childhood trauma on dissociation and to what extent. Therefore, we conducted simple mediation analysis using PTS and cognitive failures as mediators in separate mediation models. According to Baron and Kenny (1986) variables qualify for mediation analysis if the independent variable is significantly associated with the mediator variable and the outcome variable, and the mediator variable is also significantly associated with the outcome variable (David A. Kenny, 2016). Examination of correlation matrix (Table 4) and path coefficients showed that both PTS and cognitive failures qualify as intervening or mediator variables.

First, we tested the total effect of childhood trauma (composite variable with 25 items) on dissociative experience (β = .211, p = .001; see: Model 5a). Second, posttraumatic stress (PTS) was introduced as a mediator variable by adding a path from childhood trauma to posttraumatic stress (β = .489, p = .001) and a path from posttraumatic stress to dissociation (β = .381, p = .001) to the model with the direct path from childhood trauma to dissociation (see Model 5b). When posttraumatic stress was introduced, the direct effect of childhood trauma on dissociation reduced substantially and became nonsignificant (β = .024, p = .684). Likewise, when cognitive failure was used as a mediator variable with paths from childhood trauma to cognitive failures (β

=.328, p = .001) and from cognitive failures to dissociation (β =.517, p =.001), the direct effect of childhood trauma reduced considerably and became non-significant (β =.041, p = .419) (see Model 5C). Following recommendations by Preacher and Hayes (2004), the 95% bias corrected bootstrap confidence intervals (CI) were calculated to assess if the indirect effect was significantly different from zero by using 5000 bootstrapped samples. Indirect effect is considered significant at the level of 0.05 when the 95% CI does not include the zero value in the interval (David A. Kenny, 2016; MacKinnon, 2008; Preacher & Hayes, 2004). Analysis performed by using the SPSS macro for mediation analysis developed by (David A Kenny, 2013) and the process macro written by (Hayes, 2013) showed that PTS and cognitive failures independently mediated 88.48% and 80.45% of the total effect of childhood trauma on dissociation, respectively. The bootstrapped indirect effect of childhood trauma on dissociation through posttraumatic stress (β =.186; 95% CI = .118 - .269) and through cognitive failures (β =.169; 95% CI = .110 - .236) shows that there is no zero in the confidence intervals, which confirms that the indirect effects are significant at the .05 level.

Mediation analysis shows that childhood trauma is an important indirect predictor of dissociation, exerting its influence on dissociation through posttraumatic stress and cognitive failures. Likewise, the path model shows that emotional contagion and fantasy proneness also affect dissociation through cognitive failures and posttraumatic stress because the direct path from emotional contagion and fantasy proneness became non-significant after cognitive failures was added in the model and when posttraumatic stress was added in separate models.



Model 5a

Figure 7a: Direct effect between childhood trauma and dissociative experience (Model 5a).

Model 5b

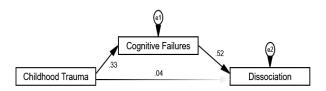


Figure 7b: Mediation model using cognitive failures as the mediator of the effect of childhood trauma on dissociation (Model 5b).

Model 5c

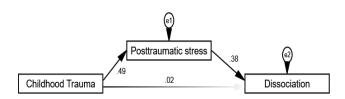


Figure 7c: Mediation model using posttraumatic stress as the mediator of the effect of childhood trauma on dissociation (Model 5c).

3.4 Discussion

This study set out to assess the psychometric properties of the qualitatively validated instruments used to assess dissociative experiences and behaviors (DEB) and their potential predictors, and to identify the potential correlates of dissociative experiences and behaviors in order to ultimately test if the correlates of dissociation could predict episodes of trance and possession in schools in Nepal.

3.4.1 Adaptation of instruments for use in the Nepal context

One of the objectives of the study was to assess the psychometric properties of the

instruments that were culturally and semantically adapted to use in this study. All the instruments except for Depression Self-Rating Scale (DSRS) for children had an acceptable level of reliability as measured by Cronbach's alpha (.74 to .94) and intra-class correlation coefficient (.72 to .89) and all the scales were approximately normally distributed (see: Table 2). Principle Components Analysis (PCA) on DSRS was performed to explore if a more reliable subscale could be constructed from DSRS. However, no subscale with good internal reliability emerged in PCA. Therefore, we used five depressive symptoms that emerged as a single component in PCA (Cronbach's $\alpha = .50$) as an indicator of current distress in the path analysis. Reliability statistics in the current study as well as in previous studies conducted in Nepal have consistently shown that DSRS is not a very reliable measure for screening depression in children and adolescents in Nepal. In a study conducted with 325 children affected by armed conflict Jordans et al. (2010) reported the Cronbach's $\alpha = .60$ and in a study with 162 general school children Kohrt et al. (2011) reported the Cronbach's $\alpha = .67$. The age range of children in both studies was 11–14 years.

3.4.2 Demographic variables and dissociative experience

Consistent with previous studies (i.e., Brunner, Parzer, Schuld, & Resch, 2000; Putnam, 1997; Putnam et al., 1996; Ross, Joshi, & Currie, 1990; Van IJzendoorn & Schuengel, 1996) demographic variables such as, gender, age, ethnicity, language, and level of education, were not significantly correlated with DEBs. However, when age was divided into subgroups of preadolescents (11-14 years) and adolescents (15 – 19 years), there was a small but significant negative correlation (r = -.15, $\alpha = .026$) between age and DEBs. This finding is consistent with those of previous studies among children and adolescents as well as adult populations (Putnam,

3.4.3 Testing existing models of dissociative experience

The second objective of the present study was to examine if the existing models of the causes and correlates of dissociative experience, namely, childhood trauma, current distress, and cognitive and personality trait factors (CPFs), are applicable to the "healthy" adolescent population sample. The result is affirmative.

At the level of bivariate correlations, the current study replicates previous findings that support the trauma model. i.e. that childhood abuse and posttraumatic stress are significant correlates (and potential causes) of DEBs (i.e., Dalenberg et al., 2012; Lansford et al., 2002; Macfie et al., 2001; Ross et al., 2008; Van IJzendoorn & Schuengel, 1996; Vissia et al., 2016) — as well as the socio-cognitive or fantasy model which argues that cognitive failures and fantasy proneness are correlates of dissociation, (i.e., Giesbrecht et al., 2008; Giesbrecht & Merckelbach, 2005; Merckelbach et al., 2002; Merckelbach & Muris, 2001; Merckelbach et al., 1999; Muris et al., 2003). Results of the present study are also consistent with previous findings that lower quality of life and depression are correlates of posttraumatic stress in adolescents (i.e., Goenjian et al., 2011). A new finding of the current study is that susceptibility to emotional contagion as measured by ECS is also a correlate of depression, posttraumatic stress, cognitive failures, fantasy proneness and DEBs.

The path analysis (Model 1a and Model 1b) confirmed that childhood trauma represented by sexual abuse, physical abuse and emotional abuse predicts DEBs as measured by the A-DES. Physical abuse appeared to be the strongest predictor of dissociative experience in the model.

Three abuse variables explained nine percent of variance in DEBs. Previous studies have

reported that childhood trauma explained four to six percent of variance in DEBs in adult populations (Briere, 2006; Van IJzendoorn & Schuengel, 1996). In this way, the present findings support the trauma model of dissociation, confirming this study's first hypothesis.

In contrast with some previous studies (Brunner et al., 2000; Macfie et al., 2001; M. Wright, Crawford, & Del Castillo, 2009; Zoroglu et al., 2003), however, physical neglect (r=.059, p=.295) and emotional neglect (r=.069, p=.222) were not significantly associated with dissociative experiences in the current study and did not make a significant contribution toward explaining the variance in DEBs. One possible explanation for this result is that some of the neglect items (taking care of each other/by family members; having to wear dirty clothes; being taken to a doctor) have social and cultural context-specific meanings and practical implications. In the current study context of Nepal, these items may not necessarily be indicative of severe neglect. For example, wearing dirty clothes may be appropriate according to local cultural understandings of cleanliness, or may simply be related to the lack of access to water and detergent in rural areas. Or, perhaps, as the parents in poor families remain busy for long hours in the effort to meet basic needs (i.e., food, clothes, shelter, materials for school) for their children, other issues such as doing laundry become secondary (Burkey et al., 2016). Thus, these items may not reflect trauma but rather aspects of a difficult living situation—that is, they may not accurately capture experiences of neglect among children in these areas.

The current distress factors, comprising quality of life, depressive symptoms and posttraumatic stress, predicted dissociative experiences (see: Model 2), confirming this study's second hypothesis. Current distress factors explained 15% of variance in dissociative experience. Posttraumatic stress was the strongest predictor in the model. In fact, posttraumatic stress independently explained 15% of variance while quality of life and depressive symptoms made no

significant direct contribution to DEBs, but explained 6% of variance in posttrumatic stress. This may be partly because of the use of the subscales (i.e., only five depressive symptom items from DSRS and only 21 objective items from ComQol-S5) with low internal reliability in the path analysis.

The CPFs—that is, cognitive failures, fantasy proneness, and emotional contagion (see: Models 3a and 3b)—together accounted for 29% of variance in DEBs, making CFPs the strongest predictor of DEBs among all three models tested in this study. This confirms the study's third hypothesis. This path model is consistent with other studies that support the fantasy model, for example, the findings of Merckelbach et al. (1999) among undergraduate students (age range: 17-43 years) that both fantasy proneness and cognitive failures are significantly associated with DEBs (van Heugten-van der Kloet, Merckelbach, Giesbrecht, & Broers, 2014). However, our results contrast with their finding that cognitive failures and fantasy proneness make unique contributions to DEBs (also see: Geraerts et al., 2006). It is clear from the correlation matrix (see Table 4) and the path model (see Model 3a) that cognitive failures and fantasy proneness are significantly correlated and that only cognitive failures make a significant direct contribution to DEBs in the present sample. Also, the strength of association between fantasy proneness and DEBs in the current study (r = .28) is weaker than the relationship found among undergraduate students (r = .37 to .58) (Giesbrecht et al., 2007; Merckelbach et al., 2002; Merckelbach et al., 1999; van Heugten-van der Kloet et al., 2014) and among normal adolescents (r = .65; age range: 12 - 17 years) (Muris et al., 2003), though it is comparable (r=.23) with that found in a clinical sample with somatoform disorders (van der Boom, van den Hout, & Huntjens, 2010). Of note, except in the study by Muris et al. (2003), dissociation was measured with the dissociative experience scale (E. M. Bernstein & Putnam, 1986). Cognitive

failures explained 28% of variance in dissociation independently, making it the strongest predictor of DEBs in the model. Fantasy proneness and emotional contagion made no direct contribution to DEBs, however, they accounted for 30% of variance in cognitive failures. All the path models showed good fit (see: Table 5).

3.4.4 Integrated model of dissociation

The third objective of the study was to test the fit of the hypothesized integrated model of DEBs (see: Figure 1) with the current data. The integrated model path analysis (see: Model 4) failed to confirm the fourth hypothesis, that is, that childhood trauma would remain significantly associated with dissociation after controlling for the effect of current distress and CPFs. The direct effect of childhood trauma on dissociation became nonsignificant after distress factors and CPFs were introduced in the path model. Mediation analysis (see: Model 5b and Model 5c) showed that the effect of childhood trauma was fully mediated independently by either posttraumatic stress or by cognitive failures. Although the result that childhood trauma had no significant direct effect on dissociative experience in the model is in contrast to our hypothesis, it is not a new or entirely unexpected finding. Previous studies have found that posttraumatic stress, emotion dysregulation (Briere, 2006; Briere et al., 2010), disorganized attachment, quality of care, social support (Carlson et al., 2001; Dutra et al., 2009; Lyons-Ruth et al., 2006; Ogawa et al., 1997), mental disorders (Mulder et al., 1998; Terock et al., 2016), and trait-like factors (Evren et al., 2013; Schimmenti, 2017) partially or fully mediate the effect of childhood trauma on dissociative experiences (also see: Dalenberg & Carlson, 2012; Trickett et al., 2011; Van IJzendoorn & Schuengel, 1996).

As hypothesized, childhood trauma was significantly associated with both CPFs and

current distress factors and CPFs were significantly associated with distress factors, confirming the fifth and the sixth hypotheses. One finding that needs mentioning here is that fantasy proneness had no significant direct effect on DEBs. The effect of fantasy proneness appeared to be mediated by cognitive failures as the significant direct effect of fantasy proneness on DEBs disappeared after cognitive failures was introduced in the model (see: Table 6).

The integrated model of dissociation assumed that the causes of DEBs are not limited to childhood trauma but rather may include multiple pathways. Path analysis (see: Model 4) demonstrated that there are indeed multiple pathways to DEBs. For example, the childhood trauma to current distress to dissociation path showed that childhood trauma has a negative effect on quality of life; poor quality of life is associated with higher levels of depressive symptoms, and higher levels of depressive symptoms is associated with higher levels of posttraumatic stress, which predicts dissociation. The significant direct path from childhood trauma to posttraumatic stress indicates that irrespective of quality of life and depressive symptoms, childhood trauma could increase the risk for posttraumatic stress, which leads to DEBs. Likewise, the childhood trauma to CPFs to dissociation path shows that childhood trauma has a direct positive effect on fantasy proneness; fantasy proneness increases the risk of cognitive failures, which in turn predict DEBs. While the significant direct path from childhood trauma to cognitive failures indicates that childhood trauma could directly impact on cognitive failures, which in turn increases the risk for DEBs even in the absence of fantasy proneness or emotional contagion.

The integrated model also revealed other more complex pathways to dissociation with and without childhood trauma and fantasy proneness in the path, for example: childhood trauma to dissociation through fantasy proneness, cognitive failures and posttraumatic stress; emotional contagion to dissociation through depressive symptoms, posttraumatic stress and through fantasy

proneness and posttraumatic stress; emotional contagion to dissociation through cognitive failures; and so forth. The theoretical as well as clinical significance of these complex paths is yet to be understood and further studies are needed to clarify the constructs, their development relationships, and causal links to dissociative symptoms. Clearly, however, the integrated path model provides evidence that childhood trauma, emotional contagion and fantasy proneness are important indirect predictors of DEBs,—exerting their influence through posttraumatic stress and cognitive failures—but are not always necessary or sufficient to produce dissociative experiences and behaviors (see: Briere, 2006; Geraerts et al., 2006; Kendall-Tackett et al., 1993; Ogawa et al., 1997; Spiegel & Cardeña, 1991; Trickett et al., 2011; Van IJzendoorn & Schuengel, 1996).

Posttraumatic stress and cognitive failures have emerged as the strongest predictors of DEBs in adolescents in this study. Though there is no consensus, there has been much discussion in the literature regarding the nature of the association between trauma, posttraumatic stress and dissociation (see: Dalenberg et al., 2012; Dalenberg & Carlson, 2012; Freyd, 1994; Gleaves, 1996; Lilienfeld et al., 1999; Lynn et al., 2014; Nijenhuis & van der Hart, 2011; Putnam, 1997; Ross et al., 2008; Silberg & Dallam, 2009; Spiegel & Cardeña, 1991). However in the case of cognitive failures, while several studies have continuously found strong positive correlations (r = .43 to .61) between cognitive failures and DEBs over almost twenty years (Bruce et al., 2007; Carrigan & Barkus, 2016a; Giesbrecht et al., 2008; Giesbrecht et al., 2007; Merckelbach et al., 1999; van der Kloet, Merckelbach, Giesbrecht, & Broers, 2014; van der Kloet, Van Huntjens, et al., 2014; D. Wright & Osborne, 2005), the reason for this association is yet to be fully understood – what does it mean theoretically and clinically that these two trait-like factors (van der Kloet, Merckelbach, et al., 2014; D. Wright & Osborne, 2005) are correlated, and how do cognitive failures contribute to dissociative processes?

Clearly, more research is needed to disentangle the association between cognitive failures and DEBs. An important issue that needs to be highlighted here is related to the commonalities between the cognitive failures and the DEBs. First, both cognitive failures and DEBs are considered traits of personality (van der Kloet, Van Huntjens, et al., 2014; D. Wright & Osborne, 2005). Although the evidence is preliminary, both DEBs and cognitive failures are found to be influenced by genetic factors (Becker-Blease et al., 2004; Boomsma, 1998; Jang, Paris, Zweig-Frank, & Livesley, 1998) and both have an inverse correlation with age, that is, DEBs and cognitive failures tend to decrease with increasing age (De Winter, Dodou, & Hancock, 2015; Putnam, 1993; Walker et al., 1996). In addition, both have common correlates such as childhood trauma (Giesbrecht et al., 2007; Merckelbach et al., 2002), perceived stress, PTSD, depression (Boals & Banks, 2012; Broadbent et al., 1982; Carrigan & Barkus, 2016b), fantasy proneness, schizotypy, alexithymia (Giesbrecht et al., 2007; Irwin, 2001; Merckelbach et al., 1999; Simeon, Giesbrecht, Knutelska, Smith, & Smith, 2009), driving errors and traffic accidents (Allahyari et al., 2008; Murray et al., 2002), sleep disturbances(Giesbrecht & Merckelbach, 2006; van der Kloet, Van Huntjens, et al., 2014; Wallace et al., 2003), and so forth. Given these commonalities, it could be argued that similar underling processes exist in both cognitive failures and dissociative experiences, or perhaps that dissociation and cognitive failures are different facets of the same phenomenon (see: Bruce et al., 2007; Carrigan & Barkus, 2016a; Merckelbach et al., 1999; W. J. Ray, 1996).

It is important to note, however, that there is clear overlap in the specific behaviours and experiences included in the measures of cognitive failures and dissociative experiences. The Cognitive Failures Questionnaire (CFQ) measures lapses in memory, attention (absorption), and action/motor function (Broadbent et al., 1982). A-DES measures dissociative amnesia (memory

disruption), absorption and imaginative involvement (attention), and depersonalization/
derealization in adolescent populations (Armstrong et al., 1997). Researchers have
acknowledged that there is some overlap between the items of CFQ and those of DES
(Giesbrecht et al., 2007; Merckelbach et al., 2001; Merckelbach et al., 1999; van Heugten-van
der Kloet et al., 2014), which also measures amnesia, absorption and depersonalization and
derealization but in adult populations (E. M. Bernstein & Putnam, 1986). Given the overlap in
the items as well as in at least two of the underlying constructs (i.e., memory and
absorption/attention), it could be argued that the observed association between cognitive failures
and DEBs is an artefact of shared items and underlying constructs (W. J. Ray, 1996).

However, some researchers have maintained that although there is overlap in a few items, the CFQ and DES measure distinct constructs and this is supported by psychometric evidence (Bruce et al., 2007; Carrigan & Barkus, 2016a; Giesbrecht et al., 2008; Giesbrecht et al., 2007; Merckelbach et al., 1999; D. Wright & Osborne, 2005). For example, Bruce et al. (2007) conducted a factor analysis using all the items of the DES and the CFQ as a single instrument with a sample of 1040 undergraduate students of 17 to 22 age range. Two factors were retained. All the items of CFQ loaded in the first factor while second factor constituted items exclusively from the DES. However, the absorption-related items of DES were also among the highly-loaded items in the first factor. Therefore, the authors concluded, "[the] CFQ measures the same things as the DES, but the DES has questions that tap something different" (p. 561). Further, as argued by Giesbrecht et al. (2008), the link between CFQ and A-DES cannot be fully attributed to items and/or construct overlap because studies (e.g. Bruce et al. (2007) have found that the CFQ correlates with all the factors of the DES (i.e., absorption/derealization, depersonalization, segment amnesia, and in situ amnesia) previously identified by William J Ray and Faith (1995),

with correlations in the range of r = 0.33 to 0. A study by Giesbrecht et al. (2007) revealed correlations of r = 0.34 to 0.51 between CFQ and DES factors (i.e., depersonalization, absorption, and amnesia). Moreover, if item overlap was the sole reason for the association, then fantasy proneness, measured with the Creative Experiences Questionnaire (CEQ), should have shown an equally strong association with DEBs because there is comparable overlap in the items of CEQ and DES (Bremner, 2010; Geraerts et al., 2006; Merckelbach et al., 2001). However, the integrated path model showed that fantasy proneness had no direct multivariate level association with DEBs and that the effect of fantasy proneness is mediated by cognitive failures and posttraumatic stress. Similarly, the observed magnitude (i.e., small to medium) of the correlations between CFQ and A-DES and fantasy proneness in the current study also may not indicate construct redundancy (see: Giesbrecht et al., 2008; Van IJzendoorn & Schuengel, 1996).

From this point of view, the problem of overlap in measures could be argued for the association between posttraumatic stress and DEBs because the assessment of posttraumatic stress also involves memory disruption (i.e., amnesia), attention (i.e. difficulty concentrating, hypervigilance), and other dissociative symptoms (i.e., flashback, numbing, derealization/depersonalization)—that is, although there is no explicit similarity in items between PTS and A-DES, there is an overlap in some of the constructs they measure and, perhaps, in the underlying dissociative mechanism (see: American Psychiatric Association, 2013; Becker-Blease et al., 2004; Diseth, 2005; Howell & Itzkowitz, 2016; Nijenhuis, 2017).

3.4.5 Limitations

This study had several limitations. First, although the current study aimed to explored causal determinants of DEBs, the cross-sectional nature of the data does not allow causal

inferences (see: Briere, Runtz, Eadie, Bigras, & Godbout, 2017). Prospective research is needed to determine if the associations in the integrated model are causal. A second issue concerns generalizability. The public schools from multiple sites in rural and urban areas where research was carried out were selected to ensure that participants representing diverse sociodemographic backgrounds were included in the study. In addition, to control for possible sample selection bias because of using a non-random (convenience) sampling method, we included all eligible students present in the school on the day of the interview. The results also showed that the demographics of the respondents in this study are comparable to the country's overall demographics according to the 2011 census. However, given the many diverse social and cultural settings found in Nepal, the study sample may not be representative of adolescent populations in other areas of the country, and thus further research with adolescents from other geographic areas is required to determine the generalizability of the present findings. Third, this study was based entirely on retrospective self-report measures, which may have introduced some recall bias in the responses; it is also possible that participants underreported sexual abuse-related items and some of the psychological symptoms because of the fear of disclosure and consequent social stigmatization (Kohrt & Hruschka, 2010; Kohrt et al., 2011; Kohrt et al., 2016; Van Ommeren et al., 1999). Fourth, all of the path models investigated in this study treated DEBs as the outcome variable. While we tested various alternative models with paths reversed and the final integrated model presented in this paper remained the best-fitting of all, we did not test any alternative models with different outcome variables. Previous research has shown that such models are also possible. For example, Merckelbach et al. (2002) tested two opposing models, namely, the trauma-dissociation model and the dissociation-trauma model (a.k.a. fantasy model). Dalenberg and Carlson (2012) have presented six different models depicting existing theories of

dissociation. Following the "theoretical argument that dissociation is an initial coping strategy, dissociation has been conceptualized as a mediator" of the effect of trauma on various mental health outcomes (i.e., Banyard, Williams, & Siegel, 2001, p. 313; Ensink et al., 2017; Kisiel & Lyons, 2001; Ross-Gower et al., 1998; Somer, 2002; Twaite & Rodriguez-Srednicki, 2004). However, we did not test these alternative models because the aim of the current study was to identify the potential correlates of DEBs.

Finally, the integrated model explained only 31% of the total variance in dissociative experience (R² = .31). This means that 69% of the variance in dissociation could be explained by a multitude of other factors, such as genetic factors, general physical and mental health conditions, family environment and attachment style, existing social support, sociocultural context, coping style, suggestibility and other personality factors. Some of these factors are among the other previously identified correlates of DEBs that were not explored in this study. Adding these variables into the integrated model could identify other possible pathways to DEBs.

3.4.6 Implications

In spite of the limitations, the findings of this study have important theoretical significance with respect to understanding the possible pathways in the development of DEBs. What is unique about the proposed integrated model is that it provides a framework wherein any number of factors that could influence the link between childhood trauma and dissociation could be incorporated as intermediary factors for testing in the future studies. Inclusion of distress factors and CPFs in the integrated model may help to address a major gap in the understanding and explanation of why only a subset of trauma-exposed individuals develop dissociation and

what makes some non-traumatized individuals able or liable to show dissociative experiences and behaviors? The link between childhood trauma, fantasy proneness and DEBs is not simple. Clearly, DEBs develop within a complex net of interactions among individual, familial, and societal factors. This model suggests that individuals, based on their propensity to certain personality traits and/or current distress situations, vary widely in their capacity to experience dissociative phenomena. It follows that it is crucial to consider individual variation in CPFs and current level of distress along with trauma factors in order to develop a more nuanced understanding of dissociative phenomena (see: Seligman & Kirmayer, 2008).

Identifying various pathways through which childhood adversities and other factors contribute to the development of dissociative disorders and related psychopathology may also help in developing theoretically informed interventions (see: D. Cicchetti & Banny, 2014). Thus, beyond their theoretical implications, the findings of this research may guide in the development of appropriate prevention and intervention strategies for dissociative disorders. This is particularly important in Nepal, where dissociative phenomena affect numerous adolescents each year with major social and educational implications.

3.5 Conclusion

As noted by Seligman and Kirmayer (2008), "understanding of dissociative phenomena like trance [and] possession... has been derailed by polemical 'either/or' arguments" (p. 54). In recent years, many researchers, including the advocates of different causal models, have acknowledged and emphasized the need for an integrated model that can account for different types of DEBs (Dalenberg & Carlson, 2012; Lemons & Lynn, 2016; Lilienfeld & Lynn, 2015). To this end, the present study set out to identify the potential correlates of DEBs. In order to do

so, we tested the fit of three existing models of dissociation with a sample of healthy adolescents and subsequently merged these models to develop an integrated model of dissociation. Findings support all three existing models as well as the newly developed integrated model. This may be taken as evidence that we need to move beyond the 'either/or' debate in understanding dissociative phenomena– that is, if all the contested models are capable of independently predicting DEBs, the debate can shift to considering the merits of more detailed process models. Further, the integrated model suggests that the effects of childhood trauma and fantasy proneness vanish in the presence of the other stronger predictors. In the present sample, mediation analysis confirmed that the effect of childhood trauma is fully mediated either by cognitive failures or by posttraumatic stress. Based on these findings, it could be argued that the evidence for direct links between childhood trauma, fantasy proneness and DEBs prevailing in the dissociation literature exists because these mediators were not tested in the same integrative model. For this same reason, the factors that have emerged as the strongest predictors in the integrated model in the current study may not remain as strong when other factors are included in the model. It is important to highlight that the integrated model explained only 31% of variance in DEBs. Therefore, to meaningfully advance the study of dissociative phenomena, future research on DEBs should focus on identifying other potential correlates and testing them in integrated models, rather than trying to prove one unicausal theory through testing simplistic models or through reviews of the extant literature which reflects current theoretical biases and assumptions (Boysen, 2011; Bremner, 2010; Kihlstrom, 2005; Kihlstrom et al., 1994; Lilienfeld & Lynn, 2015; Lynn et al., 2014). Since advocates of both the trauma model and the fantasy model of DEBs now agree that future research should focus on testing integrated models, the time is ripe to move in that direction. This study represents one step on that path.

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Introduction to Chapter Four

Study 2 examined potential correlates of dissociative experiences in a sample of adolescents attending secondary schools. We conducted a cross-sectional survey of "healthy" adolescents (N=314; 127 boys and 187 girls) from five schools in three districts of Nepal. Following, DSM/ICD characterization of spirit possession as a dissociative phenomenon, we evaluated the applicability of three existing theoretical models of dissociative experiences and behaviors (DEBs), namely: (1) childhood trauma; (2) cognitive and personality traits (i.e., cognitive failures, fantasy proneness, emotional contagion); and (3) current distress (i.e., quality of life, depression, posttraumatic stress). All the instruments except for Depression Self-Rating Scale (DSRS) for children had an acceptable level of reliability as measured by Cronbach's alpha (.74 to .94) and intra-class correlation coefficient (.72 to .89). The study found that each of the causal models of dissociation significantly predicted DEBs. Path analysis confirmed that the factors associated with all three models were correlates of DEBs. Three path models were merged to produce a hypothesized integrated model of dissociation. In the integrated model, however, only cognitive failures (lapses in day-to-day memory) and posttraumatic stress were significant predictors DEBs, suggesting that the effect of other variables on DEBs was mediated by cognitive failures and posttraumatic stress. Simple mediation analysis using posttraumatic stress and cognitive failures as mediators in separate mediation models confirmed the full mediation of the effect of childhood trauma on dissociation by cognitive failures as well as by traumatic stress. The integrated model indicated that there are several possible pathways to DEBs and multiple factors may act in concert to increase risk for triggering DEBs. This suggests that childhood trauma along with all of the other personality and distress variables assessed are important correlates of DEBs; however, trauma exposure, specific personality traits, and high

levels of distress are not always present and thus are neither necessary nor sufficient to produce dissociation. Various socioecological factors, cognitive and personality traits, and other contextual factors not measured in this study may play an important role in determining the occurrence of dissociative experiences and behaviors because the integrated model explained only 31 percent of variance on dissociation.

The third study examined the ability of the factors associated with DEBs to account for MPI through a case-control study with adolescent children affected by MPI (cases), which involved dissociative trance and possession episodes (chhopne), compared to their friends who had never experienced *chhopne* (N=379; 194 cases and 190 controls). Study 3 aimed to evaluate if the DEBs (dissociative tendency and peritraumatic dissociation) and the models of dissociation (i.e., childhood trauma, current psychological distress, cognitive and personality traits) tested among the general adolescent population predicted being affected/possessed during the epidemics of episodes of *chhopne* among children in schools in Nepal. MPI affected schools were identified based on the reports of outbreaks in the national newspapers and by using the referral sampling method. Twelve MPI affected schools located in rural areas of five districts of Nepal were selected. Cases were selected based on the experience of at least one episode of chhopne during MPI outbreaks in schools, while the control group consisted mostly of close friends of the affected children, and had comparable demographics (age, sex, caste/ethnicity, level of education, marital status), and similar exposure to *chhopne* episodes, but had never experienced *chhopne* themselves. All the affected children with an age range of 11 to 18 years were recruited in the study. Details of this study are presented in Chapter Four.

Note: A version of this study is in preparation for journal submission as: Sapkota, R. P., & Kirmayer, L. J. (in preparation). Characteristics of Mass Psychogenic Illness Outbreaks in Schools in Nepal: A Case-Control Study.

Chapter 4: Correlates of MPI outbreaks in Schools in Nepal: A case-control Study

Abstract

Background: Mass psychogenic illness (MPI) is common in schools in the rural areas of Nepal. A large number of young children and adolescents in schools are affected in clusters by trance and possession episodes every year. Despite the efforts on the part of the government as well as nongovernmental organizations (NGOs) to manage and to control such outbreaks, MPI continues to occur in many schools in the country. *Objectives*: To test if the correlates of dissociative experiences and behaviors (DEBs), identified in the previous study, could predict episodes of trance and possession (chhopne) in schools in Nepal. Methods: Using a case-control method, 384 adolescents (194 cases and 190 controls) from 12 MPI affected schools located in five districts of Nepal were assessed. MPI affected schools were identified based on the reports of outbreaks in the national newspapers and by using the referral sampling method. Cases were selected based on the experience of at least one episode of *chhopne* during MPI outbreaks in schools, while the control group consisted mostly of close friends of the affected children, and had comparable demographics (age, sex, caste/ethnicity, level of education, marital status, and self-reported socioeconomic status), and similar exposure to *chhopne* episodes, but had never experienced chhopne themselves. Results: The two groups were comparable on all measured demographic variables except family type ($\chi 2 = 3.9$, df= 1, p = .04). The simple binary logistic regression models indicated that adolescents with higher susceptibility to suggestions, living in nuclear families, who had experienced physical abuse or peritraumatic dissociation and had a higher dissociative tendency and higher levels of current psychological distress were more likely to be affected by MPI episodes. Multiple logistic regression showed that only a few variables,

such as physical abuse, peritraumatic dissociation, and hypnotizability, made a unique contribution in differentiating affected from not affected individuals. *Conclusion*: The findings from this study have important theoretical significance with respect to understanding the possible causes and correlates of MPI phenomena and may further guide the development of appropriate prevention and intervention strategies for MPI in Nepal and beyond.

4.1 Introduction

Dissociative phenomena affecting people in clusters or "epidemics" have been observed throughout the world for centuries. Written accounts of tarantism, dancing mania, and episodes of demonic possession in Europe date back to the Middle Ages (Bartholomew, 1994; Bartholomew & Wessely, 2002; Elkins, Gamino, & Rynearson, 1988; Hecker, 1846; McNamara, 2011; Scull, 2015; Sirois, 1974; Waller, 2009b). Both spirit possession and dancing mania have been interpreted in retrospect as dissociative phenomena (Elkins et al., 1988; North, 2015; Waller, 2009a, 2009b) and when they occur in clusters, have been called as mass psychogenic illness (MPI; Bartholomew, 1994; Bartholomew & Sirois, 1996; M. Colligan, Pennebaker, & Murphy, 1982; Gamino, Elkins, & Hackney, 1989; Selden, 1989). Although dissociation may not be an explicit feature in all MPI outbreaks, which may involve other symptoms or behaviours including anxiety or a wide range of medically unexplained somatic symptoms (e.g., Bartholomew, 2005; Nemery, Fischler, Boogaerts, & Lison, 1999; Novella, 2016), episodes involving dissociative trance and spirit possession states are not uncommon (Chowdhury, Nath, & Chakraborty, 1993; Eisenbruch, 2017; Mattoo, Gupta, Lobana, & Bedi, 2002; Nakalawa, Musisi, Kinyanda, & Okello, 2010; Ong, 1988; Piñeros, Rosselli, & Calderon, 1998; Sethi & Bhargava, 2009; Sharp, 1990; Trangkasombat, Su-umpan, Churujikul, & Prinksulka, 1995;

Wedel, 2012).

MPI is also known by various other names, such as mass/epidemic hysteria, mass sociogenic illness, mass conversion disorder, hysterical contagion, and medically unexplained epidemic illness. Bartholomew (1990) compiled a list of 75 different labels historically used to describe MPI phenomena. MPI has been defined as the acute onset and rapid spread of constellations of symptoms suggestive of an organic/neurological illness but without an identifiable pathogen or medical cause, and which are therefore presumed to be psychogenic (Bartholomew & Sirois, 1996; Bartholomew & Wessely, 2002; Boss, 1997; M. Colligan et al., 1982; Gamino et al., 1989; Sirois, 1974; 1999, p. 14). Researchers have identified several characteristic features of MPI that are often applied to differentiate between MPI and other epidemics, including: lack of plausible pathogenic explanation for the presenting symptoms; benign morbidity with rapid spread and rapid remission of symptoms; preponderance of the illness in females (especially girls of preadolescent and adolescent age groups); transmission of the illness through visual and/or auditory exposure; and presence of stress preceded by an actual or rumoured catastrophic traumatic event (Bartholomew & Sirois, 1996; Bartholomew & Wessely, 2002; Gamino et al., 1989; Selden, 1989; Sirois, 1999; Small, Propper, Randolph, & Eth, 1991). However, "there exists no typical diagnostic feature with exceptions found for all characteristics" (Balaratnasingam & Janca, 2006, p. 172; also see: Bartholomew, 1994).

Wessely (1987) distinguished two main types of MPI: mass motor hysteria and mass anxiety hysteria (cf. Ali-Gombe, Guthrie, & McDermott, 1996). Mass anxiety-type MPI is triggered by a sudden severe stress caused by a perceived or real threat—for example, a foul/strange odor that is perceived as coming from a poisonous gas leak or terrorist attack.

Anxiety-type MPI outbreaks are usually short-lived and any number of people in the vicinity of

the perceived threat may be affected. Often, the symptoms are alleviated by the elimination of the alleged threat (Bartholomew, 2000; Bartholomew & Wessely, 2002; Bartholomew, Wessely, & Rubin, 2012; Waller, 2009b; Wessely, 1987). Examples of anxiety-type MPI include: environmental sensitivity or sick building syndrome (with symptoms of fatigue, malaise, and cognitive impairment) (Redlich, Sparer, & Cullen, 1997; Rothman & Weintraub, 1995); MPI during or after mass vaccinations (commonly with headache, dizziness, weakness, overbreathing, and fainting) (Clements, 2003; Huang, Hsu, Lee, & Chuang, 2010; Yang, Kim, Lee, & Park, 2017); and epidemic anxiety about genital loss (e.g. *koro*, which is characterized by the fear of genital shrinking or retraction into the abdomen, and 'magical' genital theft) (Dzokoto & Adams, 2005; Ilechukwu, 1992; Jilek & Jilek-Aall, 1977; Tseng et al., 1992; Wessely, 1987).

Motor-type MPI occurs among close-knit groups exposed to longstanding psychosocial stressors. Although the index case in mass motor-type MPI may also be triggered by a perceived or real threat, the concurrent symptoms spread gradually over weeks or months to subsequent cases. In contrast to anxiety-type, symptoms may persist for days or even months after the elimination of the perceived threat (Bartholomew, 2000; Bartholomew & Wessely, 2002; Bartholomew et al., 2012; Waller, 2009b; Wessely, 1987). Examples of motor-type MPI include: epidemics of conversion symptoms (with motor or sensory deficits, involuntary movements, or pseudoseizures), epidemics of involuntary dissociative trance or spirit possession (with loss of consciousness, attribution of symptoms and behaviours to spirits, identity alteration, and amnesia of actions during the trance and possession states) (Bartholomew, 2014; Bartholomew & Rickard, 2014; Bartholomew & Sirois, 1996; Ong, 1988). Reviews of the literature conducted by various authors (e.g., Bartholomew & Sirois, 1996; Boss, 1997; M. J. Colligan & Murphy, 1982; Sirois, 1974, 1999) show that MPI occurs mostly in close-knit group settings such as schools and

factories, and occasionally in communities and in venues where a large group of people is gathered temporarily such as bus/train stations, airports, sports centres, and so forth. Schools are the most common site of occurrence of MPI worldwide.

4.1.1 MPI in Nepal

MPI is a common occurrence in contemporary Nepal (Upadhyaya, Nakarmi, Prajapati, & Timilsina, 2013). Since the late 1990s, numerous schools and several communities have been affected by outbreaks of episodes of unintentional dissociative trance (defined as "loss of the usual sense of identity without replacement by an alternate identity") and/or possession states – ("replacement of the usual sense of identity by that attributed to the possessing force") (Cardeña, van Duijl, Weiner, & Terhune, 2009, p. 172; also see: E. Cohen & Barrett, 2008; Greenwald, 1996; McNamara, 2011; Pach, Rimal, & Shrestha, 2002; Sapkota et al., 2014; Van Ommeren et al., 2001). There is no Nepali term for the MPI phenomenon. Nongovernmental organisations (NGOs) and health workers generally use the English terms "mass hysteria" or "mass conversion disorder" (*rupantarit v[b]ikriti* 7in Nepali). A generic term, fainting (*behos hune* in Nepali), and local Nepali terms *chhopne* and *chhopuwā* (to catch, to get hold of, and to cover by someone or something) are commonly used with the prefix *samuhik* (in group or in mass) (Greenwald, 1996; Pach et al., 2002; Sapkota et al., 2014; Van Ommeren et al., 2001). In the last ten years (2007 to 2016), more than 100 schools in 40 out of 75 districts in the country have witnessed epidemics of

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⁷ rupantarit (adj.), rupantaran (n.), rupantar (n.) = Conversion; v[b]ikriti = disorder, defect, deformation. There is no exact term in Nepalese vocabulary for conversion disorder. Rupantarit bikriti is used by psychologist and health workers. However, the phrase rupantarit bikriti does not bring same technical meaning and understanding for Nepalese as conversion disorder – psychological distress/conflict converted into neurological/physical symptoms - would bring to psychologist and psychiatrists in the West.

episodes of *chhopne*, affecting hundreds of young and adolescent children (Sapkota & Kirmayer, in preparation). Case studies conducted in Nepal and mass media reports suggest that MPI is particularly common among school girls. Affected individuals report significant distress with both somatic and psychological symptoms during and after the *chhopne* episode (Sapkota et al., 2014; Shakya, 2005; P. Sharma, Jha, Joshi, & Lamsal, 2010; Van Ommeren et al., 2001). Characteristic features of MPI episodes among young and adolescent children in schools in Nepal are consistent with the characteristics of MPI identified in the literature. In terms of Wessely's (1987) dichotomy, MPI in schools in Nepal are mainly motor-type MPI epidemics. Adolescent girls are most commonly affected. Episodes typically begin with a single student becoming ill with motor symptoms of conversion, dissociative trance and/or possession states, which gradually spreads to other fellow students over a period of several days. MPI episodes may continue for a few weeks to months.(Sapkota & Kirmayer, in preparation).

There is a rich ethnographic literature on spirit possession experiences and behaviours in Nepal. Since the early 1960s, anthropologists have produced detailed accounts of possession states in both rural and urban contexts and explored their local meanings (Fisher, 1989; Hitchcock, 1967; Hitchcock & Jones, 1976). These studies clarify the religious and cultural contexts in which possession takes place and trace changes in the way possession has been experienced and interpreted (Gellner, 1994, 2001; Maskarinec, 1992). However, the bulk of this work addresses intentional possession states exhibited by shamans and other mediums during healing sessions and in some religious ceremonies, and may therefore be of limited relevance to understanding the experience of those suffering from outbreaks of unintentional dissociative trance and possession (E. Cohen, 2008; E. Cohen & Barrett, 2008).

Four case studies have examined the relationships between mental illness, trauma, and

MPI in Nepal so far. Van Ommeren et al. (2001), in a case-control study, identified trauma, early loss and recent loss as predictors of MPI (reported as medically unexplained epidemic illness in this study) in a Bhutanese refugee camp in an eastern province of the country. Shakya (2005) found that low socioeconomic status was linked with dissociative trance behavior among girls exposed to a school epidemic, but did not find evidence that psychological distress had "triggered" the behavior in most cases. P. Sharma et al. (2010) found associations between low academic performance, exposure to violence, mental illness (including anxiety and depression) and susceptibility to a fainting epidemic in a school in a village in Nepal. Finally, Sapkota and colleagues (2014), in a mixed-methods case-control study, found associations between generalized anxiety, posttraumatic stress and epidemic spirit possession; however, based on accompanying qualitative data, the authors concluded that possession was more likely an avenue to cope with and communicate distress associated with existing psychosocial problems than a direct by product of mental illness.

In recent years, there has been a burgeoning recognition of and interest in MPI in Nepal. Conversion disorder, as it is referred to in medical and government/official documents, is listed among the seven mental disorders in the Health Management Information System of Nepal (see: Luitel et al., 2015). Nepal's Ministry of Health (MoH) has recognized the gravity of the situation, and has included MPI in the training curriculum for primary health workers (Shakya, 2013). The Standard Treatment Protocol for Mental Health Services in the Primary Health Care System published by MoH Nepal also acknowledges MPI in schools and provides a brief guideline on how to deal with the MPI episodes⁸ (MoH Nepal, 2016). Further, some non-profit

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⁸ The following description and guidelines are given in the Standard Treatment Protocol for Mental

organisations in Nepal (i.e., Centre for Victims of Torture, Transcultural Psychosocial Organisation, Center for Mental Health & Counseling) have published information booklets on conversion disorder that include information on MPI (labelled as mass hysteria or mass conversion disorder in these documents) and how to manage MPI outbreaks. However, given the lack of scientific studies on this topic in Nepal and the consequent lack of understanding of the etiology of these epidemics, these guidelines, training curricula and booklets published by non-profit organisations are largely based on generic information on MPI in the western psychiatric literature. As is reflected by the fact that some schools have been continuously affected by MPI episodes for 10 - 12 years, efforts to control MPI in Nepal have yet to yield anything concrete

Health Services in the Primary Health Care System by Ministry of Health Nepal for the "psychosocial management" of conversion disorders in individuals and in groups:

[&]quot;Conversion disorders are mostly managed by counseling and psychological methods. Conversion disorders have some underlying stressors of life which the patient is having difficulty managing. In case of vulnerable groups like women and children, sometimes collaboration with welfare organizations may be needed. In most of the cases, we can help the patients by talking about problem solving techniques and relaxation techniques".

[&]quot;Advice to patient and family members relating to conversion disorder:

^{1.} This is a non-lethal disorder and cannot by itself cause any long-term consequence or disability.

^{2.} If any such episodes occur, the patient should be kept in a private and peaceful area. Crowd should not be allowed to disturb the patient and no interactions or discussions should be attempted with the patient during such episodes. However, when the patient is able to communicate, a conversation with trusted family members or care-takers should be initiated to know about the stressor and what needs to be done about such stressors. Secondary gain should be cut down.

^{3.} When it occurs in a group of people like in school children, the management steps are the same as for individual cases. It should be kept in mind that whenever possible, in cases of such mass conversion disorder, individual cases need to be kept in a separate private space and the primary caregivers should avoid panicking and creating an anxious environment. The parents and the teachers should be educated about this condition and stressor can be brought out from any of the sources. Interview and counselling of the cases should be done on individual basis. The stressor should be addressed and secondary gains should be cut down. After the event subsides group education about the illness can be given.

^{4.} Regular sessions of psychosocial support are required." (MoH Nepal, 2016, pp. 21-22)

(Sapkota & Kirmayer, in preparation; Shakya, 2013).

Effective management of MPI requires a comprehensive understanding of its causes and correlates (Gamino et al., 1989). The dearth of studies on unintentional trance and possession and MPI in Nepal and worldwide represents a significant knowledge gap with implications for intervention. Previously, we conducted a study to test if existing models of dissociation (i.e., trauma model, current distress model and cognitive and personality factors model) could predict a tendency to dissociative experiences and behaviors (DEBs) in a healthy adolescent sample. The current study extended this research from a healthy population to a MPI afflicted adolescent population. Specifically, the present study tested the applicability of existing models of dissociation in predicting caseness (i.e., being affected or being ill) in MPI episodes among school children in Nepal by comparing MPI-affected and control populations with regard to: (a) exposure to trauma in childhood (b) current distress (i.e., quality of life, depressive symptoms, posttraumatic stress), (c) personality traits and distortions in cognitive processing (i.e., hypnotizability, fantasy proneness, susceptibility to emotional contagion, susceptibility to cognitive failures), and (d) dissociative experiences and behaviours (i.e., dissociative tendency and peritraumatic dissociation). In so doing, this study aimed to advance understandings of the potential causes and correlates of MPI phenomenon.

4.2 Methods

4.2.1 Participants and Procedures

This is a case-control study of adolescents who had and had not experienced *chhopne* during MPI outbreaks in schools. Data were collected from 12 schools affected by MPI in Sindhuli, Sindhupalchowk, Dang, Dolkha and Ramechhap districts from August to October

2015. MPI affected schools were identified based on the reports of outbreaks in the national newspapers. Additional MPI affected schools within the districts were identified by referral sampling (Biernacki & Waldorf, 1981) because not all MPI episodes get reported in the newspapers. The final sample comprised 384 students (194 cases and 190 controls) from 12 schools located in five districts of Nepal.

Prior to administering the survey, principals of the selected schools were approached and informed about the plan of the study. Upon verbal agreement for the study, the school principal or a teacher assigned by the principal was asked to prepare a list of affected children. Most of the schools' administration teams already had lists of affected children prepared for reporting to the District Education Office. All the affected students present in the school on the day of the interview who met inclusion criteria were invited to participate in the study. The following inclusion/exclusion criteria were used to identify and select the cases: (1) 11 to 18 years of age; (2) experienced at least one episode of *chhopne* (as defined by school teachers, family members and/or traditional healers) during the outbreak in the school; and (3) not suffering from epilepsy (*chhare rog* in Nepali) or other severe ailments (as defined by the students themselves). School authorities referred all the affected children and four children who were less than 11 years old were not included in the final analysis.

Following the strategies adopted by van Ommeren and colleagues (2001) and in one of our previous studies (Sapkota et al., 2014), the control group was formed by asking participants to identify a friend in their class who had not suffered from *chhopne* during the epidemic or in the past. The control group consisted mostly of close friends of the affected children, and had comparable demographics (age, sex, caste/ethnicity, level of education, marital status, and self-reported socio-economic status), and similar exposure to *chhopne* episodes, but had never

experienced *chhopne* themselves. Each of the selected participants in the control group confirmed that they had never experienced *chhopne*. In situations where the close friend of the affected child was absent from class on the day of the interview, the affected child and/or the school teacher identified another participant for the control group.

Data were collected by five research assistants who were trained and involved in administering questionnaires in the previous study (see: Chapter 2) and the researcher. Hypnotizability was assessed separately by the researcher after administering the questionnaires. For administration of self-report measures, cases and controls were divided into smaller groups comprising four to five participants for younger children aged 11 to 14 years and seven to ten children for older children aged 15 to 18 years. To ensure the quality of data collection, a research assistant spoke to each group to explain the procedure and clarify questions, response categories, and how to mark responses on the questionnaire. Participants then were asked to provide informed assent (see: Chapter 2 for the further details of the interview process). Groups were formed so that older children could read and respond to the questionnaires themselves, with a research interviewer available for clarification. For younger children, the research assistant read each question aloud and the children marked their responses in the questionnaire form. Each session lasted approximately 90 minutes excluding the assessment of hypnotizability.

4.2.2 Instruments⁹

Several structured English-language questionnaires and a demographic information form

⁹ All the instruments are reproduced in Appendix 1

were used in this study. Three of the instruments (i.e., Brief Childhood Trauma Questionnaire, Depression Self-Rating Scale and Child PTSD Symptom Scale) were previously translated and validated for use in Nepal (Kohrt et al., 2011; Kohrt et al., 2015). All other questionnaires used in this study were translated and adapted in the previous study using qualitative methods to achieve semantic, content, technical, and criterion equivalence (Van Ommeren et al., 1999) (see: Chapter 2 for the details of transcultural translation and adaptation process, psychometric properties, correlates and other details of the instruments used). The internal consistency scores (Cronbach's alpha) of all the instruments in the current study are presented in Table 2.

The *Adolescent Dissociative Experience Scale* (A-DES) (Armstrong, Putnam, Carlson, Libero, & Smith, 1997) is a screening measure for dissociative experiences during adolescence. The A-DES consists of a 30-item Likert-type scale in which research participants rate each statement on a scale of 0-10, where 0 signifies "never," and 10, "always." The A-DES has been widely used to assess dissociative experiences and behaviours (DEB) among adolescents and children ranging from 11 to 19 years of age (Muris, Merckelbach, & Peeters, 2003; Smith & Carlson, 1996). A mean score of 3.7 or above indicates significant dissociation (Armstrong et al., 1997).

The *Creative Experiences Questionnaire* (CEQ) (Merckelbach, Horselenberg, & Muris, 2001) is a 25-item self-report measure of fantasy proneness, the tendency to have frequent and intense involvement in fantasy and daydreaming (Giesbrecht & Merckelbach, 2006). Research participants are asked to respond to each item with "Yes" or "No" according to whether they agree with the statement or not. The CEQ has been tested with a wide range of age groups including adolescents, undergraduate students and adults (age range: 14-60 years) (Doherty,

1997; Merckelbach et al., 2001; Merckelbach, Muris, & Rassin, 1999; Sánchez-Bernardos & Avia, 2006).

The Emotional Contagion Scale (ECS) (Doherty, 1997) is a 15-item measure of susceptibility to the influence of "other's emotions" (p. 131). Participants rate their response to each item on a 4-point scale ranging from 1 (Never) to 4 (Always). The total score is computed as a sum of all the items. The higher the score, the more susceptible a person is to emotional contagion. The ECS has been translated into many languages and has been mainly used with college students (Coco, Ingoglia, & Lundqvist, 2014; Doherty, 1997; Kevrekidis, Skapinakis, Damigos, & Mavreas, 2008; Lundqvist, 2006). Emotional contagion has been implicated in mass hysteria or "madness of crowds" phenomena and other group processes (Barsade, 2002; Dezecache et al., 2013; Hatfield, Carpenter, & Rapson, 2014). The correlates of emotional contagion include personality factors (i.e., reactivity, emotionality, sensitivity to others), selfesteem, gender, social functioning, empathy, tendency to mimic others behavior (Doherty, 1997; Doherty, Orimoto, Singelis, Hatfield, & Hebb, 1995; Hatfield, Rapson, & Le, 2009), hypnotisability(Cardeña, Terhune, Lööf, & Buratti, 2009), burnout and depression (Petitta, Jiang, & Härtel, 2016; Siebert, Siebert, & Taylor-McLaughlin, 2007), and mild cognitive impairment (Petitta et al., 2016; Sturm et al., 2013).

The *Cognitive Failures Questionnaire* (CFQ) (Broadbent, Cooper, FitzGerald, & Parkes, 1982) is a 25-item self-report inventory that assesses an individual's tendency to failures in ordinary memory, perception, and motor function in everyday life (Broadbent et al., 1982; Wagle, Berrios, & Ho, 1999). Respondents rate each item on a 5-point Likert-type scale of frequency over the last 6 months (Wallace, Kass, & Stanny, 2002). The total score is obtained by summing responses on all the items. The higher the score, the more prone the individual is to

making cognitive errors in day-to-day functioning. The CFQ has been used with adolescents as young as 13 years old (Boomsma, 1998; Bruce, Ray, & Carlson, 2007; Giesbrecht, Merckelbach, Kater, & Sluis, 2007; Merckelbach et al., 1999).

The Comprehensive Quality of Life–School Version (ComQol-S5) (Cummins, 1997) is a general measure of quality of life in children and adolescents 11-18 years of age (Wallander, Schmitt, & Koot, 2001). In addition to questions on demographic information, ComQol-S5 includes a 35-item self-report scale that assesses objective and subjective dimensions of quality of life in seven domains: material well-being; health; productivity; intimacy; safety; place in the community (social well-being); and emotional well-being (Cummins, 1997; Gullone & Cummins, 1999). Total score for objective dimension is obtained by summing the response on 21 items, while total score for the 14 subjective dimension items (importance and satisfaction) and the final score, known as "percent scale maximum" are obtained by using an algorithm outlined by; (also see: Gullone & Cummins, 1999). In this study, only the 21 items of the objective dimension of quality of life (seven domains) were used in the final analysis.

The *Depression Self-Rating Scale* (DSRS) (Birleson, 1981) is an 18-item self-report measure of depressive symptoms designed for children and adolescents that has been used in a variety of cross-cultural contexts (Kohrt et al., 2011; Ventevogel, Komproe, Jordans, Feo, & De Jong, 2014). The DSRS records symptoms over the past week. Items are presented as statements such as *I sleep very well* or *I feel like crying*, and responses include: 0 "mostly", 1 "sometimes", and 2 "never". Total score is computed as a sum of responses in all the items. The DSRS has been validated for use in Nepal (Kohrt et al., 2011).

The *Brief Childhood Trauma Questionnaire* (CTQ) (Bernstein et al., 2003) is a 28-item (25 clinical items and 3 validity items) questionnaire, which allows retrospective identification of

the prevalence of child abuse and neglect among adolescents and adults. Respondents are asked about experiences in childhood and adolescence using a 5-point scale with response options ranging from "Never True" (1) to "Very Often True" (5). The CTQ has been used among adolescent and youth populations (aged 12 - 26 years) (Bernstein, Ahluvalia, Pogge, & Handelsman, 1997). The CTQ was previously translated and used in Nepal with adults (Kohrt et al., 2011; Kohrt et al., 2015).

The Child PTSD Symptom Scale (CPSS) (Foa, Johnson, Feeny, & Treadwell, 2001) was developed as a child-version of the Posttraumatic Diagnostic Scale (Foa et al., 2001). The CPSS has two parts: The first part contains 17 items that correspond to the PTSD diagnostic criteria in DSM-IV; the second part includes 6 items related to impairment in functioning. Items are presented as statements, for example: Having bad dreams or nightmares; Having trouble falling or staying asleep. Items are scored on a scale of 0-4 based on frequency of experience over the past week, where 0 represents "not at all" and 4, "almost always". Only the first part (17-items) of the scale was used in the present study. This instrument has also been validated and previously used in Nepal with children (Kohrt et al., 2011).

The *Peritraumatic Dissociative Experiences Questionnaire* (PDEQ) (Marmar, Weiss, & Metzler, 1997) is a 10-item self-report measure that evaluates the extent of dissociation at the time of an experienced traumatic event, and in the minutes and hours that followed. Each item is scored from 1 (not at all true) to 5 (extremely true). The total score is the sum of all items. A score above 15 is indicative of clinically significant dissociation. Studies suggest that peritraumatic dissociation increases the risk of developing Posttraumatic Stress Disorder (Birmes et al., 2003). PDEQ has been used among children 5 to 15 years of age (Bui et al., 2011).

The Harvard Group Scale of Hypnotic Susceptibility (HGSHS), Form A (Shore & Orne,

1962) is an adapted version of the Stanford Hypnotic Susceptibility Scale, Form A, developed by Wietzenhoffer and Hilgard (1959). Shore and Orne (1962) adapted the original Stanford scale, which was individually administered, for the purpose of group administration (Shore & Orne, 1962). The use of a group scale eliminated the need for a trained examiner to devote hours of time to the testing of each participant individually (Piesbergen & Peter, 2006; Shor & Orne, 1963). The HGSHS can be administered to groups of unlimited size and is one of the most widely used tools to obtain initial ratings of hypnotic susceptibility (Laurence & Perry, 1982). It consists of 11 sets of instructions/suggestions aimed at inducing hypnosis. After going through all the 11 hypnotic suggestions, the participant judges whether or not s/he performed the suggested behaviors and then records his/her judgment in a separate response booklet (Sheehan & McConkey, 1979; Shore & Orne, 1962). The amnesia item (the 12th item on the scale) is scored based on the participant's recall of the nine activities suggested during hypnosis. Amnesia is scored positive "if fewer than four of the nine items induced within hypnosis were recalled before the signal to remember was given" (Shore & Orne, 1962, p. 12). For this study, the hypnotic induction procedures were voice recorded from a Nepali version of HGSHS that was translated and adapted as a part of this study. The recording of the hypnotic induction procedures was played after a brief introduction/rapport session¹⁰ by the researcher in all of the hypnotic induction sessions conducted with the research participants.

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¹⁰ It involved telling the participants what the session was about and how it will be done. Hypnosis (*Sammohan*) and hypnotic induction process was introduced as attention focusing exercise (*dhayan kendrit garne abvyas*) because the participants were unfamiliar about the concept of hypnosis. To illicit maximum engagement with the task we introduced, a term that would be more engaging and non-threating to the participants was used. Also, non-familiar female voice was used for the recording of instructions for the induction to make it less authoritative and more soothing/relaxing.

4.2.3 Data Analysis

Data were analyzed using IBM SPSS Statistics 23.0 with essentials for R 23.0 software. First, the SPSS data file was checked for any inaccuracies and missing values and the identified errors were corrected by examining the original files. The pattern of missing data was examined to assess if the data were missing completely at random (MCAR). Missing data were imputed using the Expectation Maximization (EM) algorithm (Graham, 2009; Rubin & Little, 2002). Second, assumptions of multivariate analysis (i.e., normality, linearity, outliers etc.) were assessed and evaluated by using graphical and statistical methods. Third, the descriptive statistics, including the frequency, percentage, mean and standard deviation were calculated for the socio-demographic, and all other psychometric scales. Comparisons of sociodemographic variables between cases and controls were conducted using Student's t for continuous variables and Chi-square (χ^2) for categorical variables. Fisher's Exact p value was considered for 2X2 tables and Fisher-Freeman-Halton Exact Test results were used for tables larger than 2X2 (both outputted as Exact Sig. in SPSS) when the assumption for Pearson Chi-Square test was violated (i.e., minimum expected cell counts less than 5) (see: Mehta & Patel, 2011). Fourth, internal consistency (a form of reliability) of the psychometric scales was measured with Cronbach's alpha (α). Fifth, simple (univariate) binary logistic regression models (i.e., involving one independent variable and one binary dependent variable) for each of the main psychometric variables were conducted to assess if each of these variables independently discriminated between the cases and the controls. Next, given that the aim of the study was to appraise if the various existing theoretical models of dissociative experience and behaviors (i.e., the trauma model, the current distress model and the cognitive and personality traits model) and the dissociative experience model (i.e., dissociative tendency [measured by ADES) and

peritraumatic dissociation [measured by PDEQ]) could predict caseness in the outbreaks of mass psychogenic illness, multivariable binary logistic regression were conducted separately for each model. Model fit was assessed using the Hosmer & Lemeshow goodness-of-fit χ^2 statistic. A nonsignificant (i.e., p>.05) Hosmer & Lemeshow χ^2 statistic indicates a good fit (Hosmer, Lemeshow, & Sturdivant, 2013).

4.2.4 Ethical Considerations

All procedures applied in this research comply with the ethical standards of the Helsinki Declaration of 1975, as amended in 2013 (World Medical Association, 2013). The Research Ethics Committee of the Jewish General Hospital, Montreal Canada, provided ethical approval for this study. No financial support was provided to the participants. Snacks were provided to each participant after administering the questionnaire and before hypnotic induction. In cases where it was not feasible to provide snacks each participant was given 50 Nepalese Rupees (equivalent to US \$0.50) to buy snacks.

Prior to interviewing the children, the details of the study including possible risks and benefits of participating in the study were discussed with principals, teachers and/or authorities in the school based on the informed consent form. Since it was not logistically possible to invite all the parents of the potentially participating students, both the principal of the school, as a guardian, and the class teacher or an administrative staff, as a witness, provided written consent on the day of the interview. Students themselves provided informed assent. This has been a common practice in research studies in Nepal (see: Kohrt et al., 2011; Regmi et al., 2016).

4.3 Results

4.3.1 Preliminary Analysis and Socio-demographic Characteristics

The sample used in the final data analysis consisted of 379 adolescents (193 MPI affected and 186 not affected) of 11 to 18 years of age. Five individuals were excluded from the 384 adolescents originally assessed. Among the excluded, one individual had incomplete data because of a *chhopne* episode during the interview and four other individuals were aged less than 11 years. Missing data analysis showed that less than one percent (i.e., 0.75%) of the data were missing, excluding the data missing because of the design (i.e., 105 children did not complete the CPSS and PDEQ because they could not report any traumatic experience). Based on MCAR test ($\chi 2 = 276.73$, df= 254, p = .156), missing data were determined to be missing at random, and therefore imputed using EM algorithm (Enders, 2010; Graham, 2009; Little & Rubin, 2002; Tabachnick & Fidell, 2013).

Table 1 displays the socio-demographic characteristics of the case (affected) and control groups. The two groups were comparable on all measured demographic variables except family type ($\chi 2 = 3.9$, df= 1, p = .04) – that is, there were no statistically significant differences between the groups in age, gender, caste/ethnicity, socio-economic status, or level of education. A majority (55.5 %) of the affected were living in nuclear families, while a majority (54.8%) of the controls were living in united/extended families. Calculation of odds ratio (OR) indicated that children living in a nuclear family had 1.5 times higher odds of being affected by MPI outbreak (OR = 1.572, 95% CI = 1.048 – 2.358). The majority (96.4%) of the research participants were female and the approximate ratio of male to female among the affected was 1: 31.

Table 1: Comparison of Demographic Characteristics of Respondents in Case and Control Groups.

Variables	Subcategory	Contr		Case		Total	χ2	df	p
		n	%	n	%				
Age group	Early Adolescents	124	48.1	134	51.9	258	0.33	1	0.56
	Adolescents	62	51.2	59	48.8	121			
Gender	Male	7	53.8	6	46.2	13	0.12	1	0.47
	Female	179	48.9	187	51.1	366			
District	Sindhuli	64	50	64	50	128	0.59	4	0.96
	Sindhupalchowk	24	51.1	23	48.9	47			
	Dang	31	50	31	50	62			
	Ramechhap	49	48.5	52	51.5	101			
	Dolkha	18	43.9	23	56.1	41			
Education	Lower Secondary	111	51.6	104	48.4	215	1.29	1	0.25
	Secondary	75	45.7	89	54.3	164			
Caste/ethnicity	Brahman Chhetri	74	48.7	78	51.3	152	2.09	2	0.35
_	Janjati	82	52.6	74	47.40	156			
	Dalit	30	42.3	41	57.7	71			
Religion	Hindu	161	49.4	165	50.6	326	0.84	2	0.66
	Buddhist	18	51.4	17	48.6	35			
	Others	7	38.9	11	61.1	18			
Family	Agriculture	139	46.8	158	53.2	297	3.33	4	0.51*
occupation	Job	7	53.8	6	46.2	13			
-	Business	18	54.5	15	45.5	33			
	Working abroad	18	62.1	11	37.9	29			
	Others	4	57.1	3	42.9	7			
Family type	Nuclear	94	44.5	117	55.50	211	3.90	1	0.04
	United/Extended	92	54.8	76	45.20	168			
Marital status	Never married	184	48.9	192	51.1	376	0.37	1	0.62*
	Married	2	66.7	1	33.3	3			
Residence	Rented house	2	20	8	80	10	3.47	1	0.11*
	Family owned	184	49.9	185	50.1	369			
Child-	Low	61	49.6	62	50.4	123	0.02	1	0.89
perceived SES	Medium/High	125	48.8	131	51.2	256			
_	-	n	M (SD)	n	M (SD)	Total	t test	df	p
Age		186	13.63 (1.8	36) 193	13.65 (1.86	5) 379	-0.097	377	0.92

*Fisher's Exact Test or Fisher-Freeman-Halton Exact Test (see: Mehta & Patel, 2011)

4.3.2 Descriptive and Psychometric Statistics of the Measures

Descriptive statistics and psychometric properties of the scales used in this study are presented in Table 2. Cases had slightly elevated mean scores compared to controls on all of the measures except in CEQ. All the scales but DSRS (i.e., Cronbach's α = .52) had good to

excellent reliability scores for cases (i.e., Cronbach's α ranged from .68 to .93), while for controls Cronbach's α was below .6 for DSRS and HGSHS. All the measures had skewness and kurtosis scores within the acceptable range of approximate normality (i.e., skewness and kurtosis less than +1 and greater than -1) (Hair, Black, Babin, & Anderson, 2014; Tabachnick & Fidell, 2013).

Table 2: Descriptive and Psychometric Statistics of Measures by Case-Control Groups

	Controls						Cas	ses						
Scales	Items (Range)	n	M	SD	α	Skew	Kurt.	n	M	SD	α	Skew	Kurt.	N
ComQol	35 (35 - 176)*	186	132.91	10.22	.76	-0.33	0.90	193	134.12	10.74	.78	-0.40	0.66	379
ADES	30 (0 - 300)	186	94.82	53.35	.92	0.61	0.11	193	107.66	57.03	.93	0.38	-0.39	379
CEQ	25 (0 - 25)	186	10.13	4.53	.77	0.18	-0.52	193	10.82	4.43	.74	0.23	-0.70	379
CFQ	25 (0 - 100)	186	39.79	15.39	.85	0.11	-0.60	193	41.19	14.55	.83	0.23	0.06	379
ECS	15 (15 - 60)	186	34.85	7.42	.79	-0.07	-0.22	193	35.70	7.13	.74	-0.14	-0.20	379
DSRS	18 (0 - 36)	186	12.62	3.47	.53	0.34	0.08	193	13.47	3.55	.52	0.31	0.67	379
PDEQ	10 (10 - 50)	132	23.24	7.36	.82	0.30	-0.39	142	26.10	7.51	.80	0.28	-0.30	274
CPSS	17 (0 - 51)	132	20.14	0.75	.87	0.33	0.12	142	22.54	8.83	.86	0.25	-0.12	274
HGSHS	12 (0 - 12)**	93	7.23	0.24	.57	-0.22	-0.99	102	8.36	2.52	.68	-0.71	-0.35	195
CTQ-25	25 (0 - 100)	186	21.08	1.03	.89	1.00	0.59	193	24.03	14.81	.88	0.72	-0.26	379

^{*} Scoring of some of the items was adapted for this study.

ComQol = Comprehensive Quality of Life –S5; ADES = Adolescent Dissociative Experience Scale; CEQ = Creative Experience Questionnaire; CFQ = Cognitive Failures Questionnaire; ECS = Emotional Contagion Scale; DSRS = Depression Self-Rating Scale; PDEQ = Peritraumatic Dissociative Experiences Questionnaire CPSS = Child PTSD Symptom Scale; HGSHS = Harvard Group Scale of Hypnotic Susceptibility Scale (Form CTQ = Childhood Trauma Questionnaire; M = Mean; SD = Standard Deviation; α = Cronbach's alpha

4.3.3 Regression Analysis

As the aim of this study was to identify the correlates of caseness in MPI outbreaks and to test if existing models of dissociation could predict case status in MPI, a series of simple logistic regressions (one predictor variable and one outcome variable) were run first. Then, multivariable logistic regression involving all the main variables within each of the existing

^{**} Including the amnesia item

models (i.e., childhood trauma, current distress, cognitive and personality traits, and dissociation) were conducted.

4.3.3.1 Childhood Trauma and Case Status in MPI

First, a simple binary logistic regression with childhood trauma (CTQ-25) as a predictor variable and case status as a dependent variable was performed. The model was statistically significant, $\chi^2(1) = 3.97$, p < .05, indicating that childhood trauma significantly discriminated cases from controls— that is, childhood trauma was a significant predictor of caseness in MPI. Second, a multiple variable logistic regression involving five childhood abuse and neglect variables (physical neglect, emotional neglect, emotional abuse, physical abuse and sexual abuse) as predictors variables on case status was performed. The overall model was significant, $\chi^2(5) = 11.99$, p < .05. Variance in case status accounted for by the model was between 3.1% (Cox & Snell R²) and 4.2% (Nagelkerke R²). Table 3 shows regression coefficients, Wald statistics, odds ratios, and 95% confidence intervals for odds ratios for each of the five predictors. As shown in the table, only physical abuse significantly predicted case status, Wald's $\chi^2(1) = 5.12$, p < .05. Third, a model run excluding physical abuse resulted in a nonsignificant overall model, $\chi^2(4) = 6.76$, p = .149, confirming that physical abuse was the only significant predictor of caseness in MPI.

Table 3: Logistic Regression Analysis for Childhood Trauma of Case-Control Groups

Variables	B (S.E.)	Wald's χ ²	df	p	OR	95% C.	I. OR
						Lower	Upper
Childhood trauma	0.014 (0.007)	3.904	1	.048	1.014	1.000	1.029
Constant	-0.285 (0.192)	2.197	1	.138			
Goodness-of-fit		χ^2	df	p			
Overall Model		3.972	1	.046			
Hosmer & Lemesho	3.582	8	.893				
Note: Cox & Snell $R^2 = 0.01$; Nagelkerke $R^2 = 0.014$							
	B (S.E.)	Wald's χ ²	df	p	OR	95% C.	I. OR
						Lower	Upper
Physical Neglect	0.059 (0.038)	2.401	1	.121	1.060	0.985	1.142
Emotional Neglect	-0.026 (0.032)	0.626	1	.429	0.975	0.915	1.038
Emotional Abuse	-0.070 (0.042)	2.821	1	.093	0.932	0.859	1.012
Sexual Abuse	0.020 (0.034)	0.323	1	.570	1.020	0.953	1.091
Physical Abuse	0.093 (0.041)	5.119	1	.024	1.097	1.013	1.189
Constant	-0.284 (0.226)	1.578	1	.209			
Goodness-of-fit		χ^2	df	p			
Overall Model	11.987	5	.035				
Hosmer & Lemesho	9.10	8	.334				
Note: χ^2 = Chi square; df = Degrees of Freedom; OR = Odds Ratio; CI = Confidence Interval;							

Cox & Snell $R^2 = 0.031$; Nagelkerke $R^2 = 0.042$

4.3.3.2 Current Distress and Case Status in MPI

In the simple binary logistic regression performed with each of the variables of the current distress model (i.e., depression, posttraumatic stress and quality of life) as independent predictors of case status, depression, Wald's $\chi^2(1, N = 379) = 5.43$, p < .05, and posttraumatic stress, Wald's $\chi^2(1, N = 274) = 4.99$, p < .05, were statistically significant according to Wald's criteria, while quality of life was not, Wald's $\chi^2(1, N = 379) = 0.311$, p = .58. Next, a multivariable logistic regression was conducted to assess if the full distress model could significantly discriminate between case and control status in MPI. As shown in Table 4, the

overall model was nonsignificant, $\chi^2(3) = 6.52$, p=.089, and according to Wald's criteria, none of the predictors were statistically significant at p<.05. This indicates that the current distress model cannot significantly differentiate case status in MPI. Multicollinearity was not detected among these variables when assessed using Tolerance and Variance Inflation Factor (VIF).

Table 4: Logistic Regression Analysis for Current Distress of Case-Control Groups

Variables	B (S.E.)	Wald's χ ²	df	p	OR	95% C.I. OR	
		λ				Lower	Upper
Depression	0.039	0.981	1	.322	1.039	0.963	1.122
	(0.039)	2.7.00		1.0	1.006	0.005	1.050
Posttraumatic	0.026	2.768	1	.10	1.026	0.995	1.058
stress Quality of life	(0.015) 0.026	0.908	1	.341	1.027	0.973	1.084
Quanty of fife	(0.028)	0.700	1	.541	1.027	0.773	1.004
Constant	-2.675	1.81	1	.179	0.069		
	(1.989)						
Goodness-of-fit		χ^2	df	p			
Overall Model		6.523	3	.089			
Hosmer & Lemo	eshow	6.745	8	.564			

Note: χ^2 = Chi square; df = Degrees of Freedom; OR = Odds Ratio; CI = Confidence Interval; Cox & Snell R² = 0.024; Nagelkerke R² = 0.031

4.3.3.3 Personality Traits and MPI

Multivariable logistic regression conducted with hypnotizability, fantasy proneness, cognitive failures and emotional contagion as the predictors variables and case status as an outcome variable showed that the overall model was statistically significant (see Table 5). However, only hypnotizability, Wald's $\chi^2(1, N=195) = 9.18$, p < .05, was statistically significant. Table 5 shows regression coefficients, Wald statistics, ORs, and 95% confidence intervals for odds ratios for each of the four predictors. A model run omitting hypnotizability resulted in a nonsignificant overall model, $\chi^2(3, N=379) = 2.71$, p = .438, confirming that hypnotizability was

the only significant predictor of caseness in MPI. This result also confirms that fantasy proneness, cognitive failures and emotional contagion are unrelated to case status in MPI.

Table 5: Logistic Regression Analysis for Cognitive and Personality traits of Case-Control Groups

Variables	B (S.E.)	Wald's χ ²	df	p	OR	95% C.I. OR	
						Lower	Upper
Hypnotizability	0.189	9.184	1	.002	1.208	1.069	1.365
	(0.062)						
Fantasy proneness	-0.022	0.337	1	.561	0.978	0.906	1.055
	(0.039)						
Cognitive failures	-0.017	2.155	1	.142	0.983	0.962	1.006
	(0.011)						
Emotional	0.025	1.175	1	.278	1.025	0.980	1.071
contagion	(0.023)						
Constant	-1.338	2.666	1	.103			
	(0.820)						
Goodness-of-fit		χ^2	df	p			
Overall Model		13.615	4	.009			
Hosmer & Lemesho)W	6.694	8	.570			

Note: χ^2 = Chi square; df = Degrees of Freedom; OR = Odds Ratio; CI = Confidence Interval; Cox & Snell R² = 0.067; Nagelkerke R² = 0.090

4.3.3.4 Dissociative Experience and MPI

Assessed individually in simple logistic models, both dissociation (DEBs), Wald's $\chi^2(1)$ = 5.01, p<.05, and peritraumatic dissociation, Wald's $\chi^2(1)$ = 9.51, p<.05, were statistically significant predictors of case status. However, when a model involving both variables was run, only peritraumatic dissociation remained statistically significant. Table 6 displays regression coefficients, Wald statistics, odds ratios, and 95% confidence intervals for odds ratios for each of the four predictors.

Table 6: Logistic Regression Analysis for Dissociative Experiences and Behaviors (DEBs) of Case-Control Groups

Variables	B (S.E.)	Wald's χ ²	df	p	OR	95% C.	I. OR
						Lower	Upper
Dissociation (DEPa)	0.062 (0.067)	0.874	1	.350	1.064	0.934	1.213
(DEBs) Peritraumatic dissociation	0.048 (0.017)	7.584	1	.006	1.049	1.014	1.085
Constant	-1.326 (0.451)	8.637	1	.003	0.266		
Goodness-of-fit		χ^2	df	p			
Overall Model		10.869	2	.004			
Hosmer & Len	neshow	8.911	8	.350			

Note: χ^2 = Chi square; df = Degrees of Freedom; OR = Odds Ratio; CI = Confidence Interval; Cox & Snell R² = 0.039; Nagelkerke R² = 0.052

4.4 Discussion

Using a case-control design, the present study tested the applicability of models of DEBs in predicting caseness in MPI outbreaks among school children in Nepal. Demographic characteristic of the cases and the controls were comparable. Psychometric properties of all the instruments except for the DSRS were good to excellent. The DSRS has consistently appeared to be unreliable in measuring depressive symptoms among adolescent samples in two of our studies (see Chapter 2). At this point, we do not know if this inconsistency is related to the scale or to the construct of depression itself in the context of Nepal. This issue needs to be further explored among other groups of children in Nepal.

A series of binary logistic regression analyses were performed. The simple binary logistic regression models showed that family type (i.e., nuclear family), childhood trauma (i.e., physical abuse), a higher tendency for dissociative experiences, prior experience of peritraumatic

dissociation, depression, posttraumatic stress, and hypnotizability were significant predictors of caseness, that is, the odds of being affected by MPI episodes were slightly higher among those who were living in a nuclear family (OR= 1.57, 95% CI:1.05-2.36) or were physically abused (OR= 1.07, 95% CI:1.02-1.13), and among those who had current depressive symptoms (OR= 1.07, 95% CI:1.01-1.14), posttraumatic stress (OR= 1.03, 95% CI:1.01-1.06), a higher tendency to dissociative experiences (OR= 1.14, 95% CI:1.02-1.27), prior experience of peritraumatic dissociation (OR= 1.05, 95% CI:1.02-1.09), and higher hypnotic susceptibility (OR= 1.21, 95% CI:1.07-1.36), than among those without such experiences and qualities. The family type variable, which was not a significant predictor of DEBs in the healthy population study (see Chapter 2), turned out to be a significant predictor of caseness in MPI in this study, while cognitive failures, which was the strongest predictor of DEBs in the previous study, and other cognitive and personality factors (i.e., emotional contagion, fantasy proneness) were found to be unassociated with caseness in MPI. In terms of the ability of existing models of DEBs (i.e., childhood trauma, current distress and personality traits) to predict caseness in MPI episodes, the results were unimpressive. Multiple logistic regression showed that only a few variables within these models, such as physical abuse, peritraumatic dissociation, and hypnotizability, made a unique contribution in differentiating affected from not affected individuals.

4.4.1 Childhood Trauma

The study showed that childhood trauma, especially physical abuse, was a significant predictor of caseness in MPI outbreaks in Nepal. Although studies assessing the effect of childhood abuse on case status in MPI are sparse, some studies have identified childhood traumas, such as loss (i.e., death of a family member or close friends) and parental divorce, as

significant predictors of MPI (Small & Nicholi, 1982; Small et al., 1991; Van Ommeren et al., 2001), while Small, Feinberg, Steinberg, and Collins (1994) did not find a significant association between grief and MPI. Likewise, Trangkasombat et al. (1995), in a study of MPI affected children in Thailand, did not find a significant association between traumatic events and caseness. However, it is well established in the dissociation literature that childhood abuse is a predisposing factor for DEBs (see: Cardeña, 2012; Cicchetti & Banny, 2014). A large number of studies have consistently found a positive association between childhood trauma (physical, sexual and emotional abuse) and DEBs in children and adolescents as well as in adults (Hornstein & Putnam, 1992; Lansford et al., 2002; Macfie, Cicchetti, & Toth, 2001; Pick, Mellers, & Goldstein, 2017; Putnam, 1993; Putnam, Helmers, & Trickett, 1993; Ross et al., 2008; Sar, Önder, Kilincaslan, Zoroglu, & Alyanak, 2014; Trickett, Noll, & Putnam, 2011; Vissia et al., 2016). Some studies (e.g., Chu & Dill, 1990; Hulette, Freyd, & Fisher, 2011; Macfie et al., 2001; Mulder, Beautrais, Joyce, & Fergusson, 1998) have found physical abuse to be the strongest predictor of DEBs in children. Thus, the finding of this study is consistent with previous studies of DEBs. Furthermore, the finding that physical abuse is a predictor of MPI may shed some light on the high rates of this phenomenon in Nepal. Corporal punishment as a means of disciplining and controlling children is a common practice in schools and in families in Nepal (Kandel, Kunwar, Karki, Kandel, & Lamichhane, 2017; Mishra et al., 2010; Rimal & Pokharel, 2014). A recent large-scale study found that "one in every second child is physically punished" in Nepal (Kandel et al., 2017, p. 106). In this study, 81% of the total participants endorsed at least one physical abuse item. Compared to the control group (76.3%, n=186), a higher percentage (85%, n=193) of MPI affected children scored positively on physical abuse. Further, although the CTQ was administered to assess childhood trauma, because the study participants

themselves were children (mean age = 13.6, SD = 1.86), what they reported as childhood trauma (i.e., physical abuse) may be an ongoing abuse experience. It is therefore possible that MPI is serving as a response or coping mechanism associated with the abuse.

From the existing data, it cannot be determined whether the reported physical abuse was related to the school environment because the items in the questionnaire are not specific to abuse in schools (out of five physical abuse related items, two items concern abuse in the family and the other three are non-specific to the context of abuse). Further, among the children who reported having traumatic experiences (n=274), 5.1% mentioned family discord (quarrel between parents, father or mother left the family and got married to someone else) and 4% indicated scolding and hitting by parents as their traumatic experiences. Only three children (1.1%) described hitting by teachers as their traumatic incident. However, the observed discrepancy between scores on the items specific to abuse in the family and the non-specific item "I believe that I was physically abused" may be indicative of physical abuse outside family settings. In this study, 31.6% of the participants scored positively for physical abuse in the family, while 67.4% of the participants considered themselves physically abused. This implies that 36% of youth experienced physical abuse outside the family. Of course, it is possible that some children who acknowledged being physically abused were reluctant to disclose that the abuse occurred in the family. However, if abuse in the family is the primary reason behind MPI outbreaks, one important question is: why does *chhopne* in children occur almost exclusively in schools and not in the home (see: Sapkota & Kirmayer, in preparation)? Is the school environment conducive to the occurrence of *chhopne* episodes? Or, is the school providing a theatre for abused children to express their suffering?

It was not possible to explore family and school dynamics with the existing quantitative

data; however, the results suggest that there is a need to dig deeper into the family, school and broader social and cultural context in order to understand potential causal links between childhood abuse and MPI. For example, living in a nuclear family was associated with being affected and the results indicated that physical abuse was higher in nuclear families (M=4.25, SD=4.01) compared to joint/extended families (M=3.93, SD=3.94), although this difference was not statistically significant, t(377)=.789, p=.431. The transition from joint/extended families to nuclear families may entail a loss of resources and support. The lack of social and emotional support in childhood has been found to be associated with dissociative experiences and behaviors (Carlson et al, 2001; Irwin, 1996; Narang & Contreras, 2005). A study of psychosocial problems (i.e., cognitive, emotional and behavioral) among the randomly selected adolescents (N=787) from various schools of one district in Nepal showed that children living in nuclear families were 3.6 times more likely to have psychosocial problems than those living a non-nuclear family and the adolescents living with single parent were 3.46 times more likely to have such problems than those living with both parents (Bista, Thapa, Sapkota, Singh, & Pokharel, 2016). Likewise, Kandel et al. (2017, p. 106) found that the odds of being physically punished were higher among children whose father was currently abroad and whose father was away from home but in the same country.

The results of the current study (see Figure 1) also suggested that physical and sexual abuse were higher in families in which one parent (usually the father) was working in the foreign country. In our previous studies (e.g., Sapkota et al., 2014; Sapkota & Kirmayer, in preparation), we found that women who had fathers or husbands living in cities other than their home village ceased having possession experiences as soon as they left their village to visit their male relation.

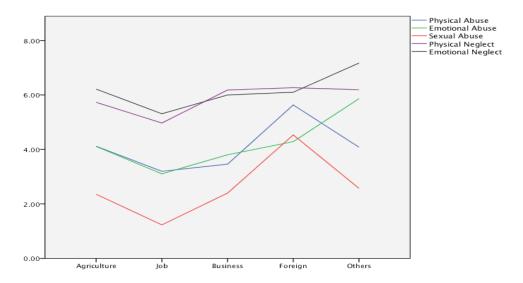


Figure 1: Family Occupation and Child Abuse

The disruption in family dynamics associated with changes in family structure may also impede the development of secure attachment in children. Studies have found a strong association between attachment style and dissociative experiences in children, adolescents, and in later life (Gusic, et al. 2016; Liotti, 1992, 1999; Dutra, Bureau, Holmes, Lyubchik, & Lyons-Ruth, 2009; Lyons-Ruth et al., 2006; Ogawa et al., 1997). These links between changes in family configuration and developmental processes may help account for the apparent increased in MPI among adolescents in Nepal in recent decades.

4.4.2 Current Distress

This study did not find evidence for current distress as a predictor of case status [χ^2 (3) = 6.53, p=.089]. However, a simple logistic regression showed that posttraumatic stress and depressive symptoms each were significantly associated with case status in MPI outbreaks.

The role of social stress or strain and psychological distress is a common theme in the discussion of MPI in the literature (Cohan, 2010; B. G. Cohen, Colligan, Wester, & Smith, 1978;

Merskey, 1995; Sirois, 1974; Tseng, 2001; Waller, 2009a). Although there are no studies assessing the comprehensive quality of life (including all seven domains: material well-being, health, productivity, intimacy, safety, social well-being, and emotional well-being) of individuals affected in MPI, Factors indicating poor quality of life (i.e., low socio-economic status, existing health problems, work/study pressure, social oppression, insecurity, problems in social relationships, lack of social support) have been historically implicated in MPI outbreaks (see: M. J. Colligan & Murphy, 1982; Hall & Johnson, 1989; Harrington, 1998; Hecker, 1846; Kerckhoff, 1982; Kerckhoff & Back, 1965; Magnavita, 2000; Sharp, 1990; Sirois, 1974; Small et al., 1991). However, quality of life was not a significant predictor of case status in the current sample of adolescents. It is likely that the selection of cases and controls with comparable demographics partially explains this result. As noted by van Ommeren and colleagues (2001), it is possible that the affected chose close friends with similar backgrounds and situations for the controls. This finding could also be due to the instrument itself; we encountered several cross-cultural compatibility issues during the adaptation of this instrument (see: Chapter 2). In any case, this finding should not be interpreted as broad evidence that stressors do not play a role in MPI, but rather indicates that the stressors assessed by the quality of life measure we used were not relevant for the current study sample.

Regarding current psychological distress (i.e., depression, posttraumatic stress), a few studies (e.g., Sapkota et al., 2014; Sparks et al., 1990; Trangkasombat et al., 1995; Van Ommeren et al., 2001) have used psychometric measures to assess rates of mental health problems among people affected in MPI episodes, but the findings are inconsistent (Bartholomew & Sirois, 1996; Bartholomew & Wessely, 2002; Sirois, 1999). For example, Sparks and colleagues (1990) evaluated 53 workers affected in a MPI outbreak in the United

States and reported that the majority (74%) met DSM-III-R (Diagnostic and Statistical Manual of Mental Disorders, 3rd edition revised; American Psychiatric Association, 1987)) criteria for major depression, panic disorder, or both. In a study of MPI among children in a school in Thailand, Trangkasombat et al. (1995), found that 44% of cases met DSM-III-R criteria for adjustment disorder, dysthymia, major depressive disorder, or dissociative disorder not otherwise specified (DDNOS). A case-control study of a MPI outbreak in a work-setting in Canada by House and Holness (1997), involving 208 cases and 61 controls in an adult population, found no significant difference in "psychiatric problems" between cases and controls (p. 92). Lee and colleagues (1996), in a study of MPI outbreak in a female convent school in Hong Kong, did not find a significant difference between cases and controls on any of the variables assessed (i.e., anxiety, previous illness, treatment, history of any current problems, ongoing stresses, peer and family relationships, emotional adjustment, and recent life-events) among the adolescents. Van Ommeren and colleagues (2001) compared Persistent Pain Disorder, Dissociative Disorder, Post-Traumatic Stress Disorder, Affective Disorder and Generalized Anxiety disorder between cases and controls in an outbreak of MPI in a Bhutanese refugee camp in Nepal and found that the groups were not significantly different on any of these measures. In a study of a sample similar that of the current study, P. Sharma et al. (2010) found higher rates of anxiety and depression among the affected in a study of a MPI epidemic in a school in Nepal. Finally, in a study of an outbreak of spirit possession in a community in Nepal, Sapkota and colleagues (2014) found that generalized anxiety and posttraumatic stress, but not depression, were significantly associated with caseness. In the present study, although posttraumatic stress and depression were significantly associated with caseness, taking into account the strength of association (i.e., Point Biserial Correlation $(r_{pb}) = .121$, p < .05 and $r_{pb} = .136$, p < .05 for depression and PTSD,

respectively), the low amount of variance in case status accounted for by these variable (i.e., between 1.5% [Cox & Snell R²] and 2.5% [Nagelkerke R²]), it remains unclear when or to what extent trance and possession episodes experienced by adolescents in schools in Nepal can be viewed as a manifestation of underlying psychological distress or mental disorder. Moreover, the rates of distress in the non-MPI affect groups were high: 38.2% of non-affected children scored above the cut-off point (≥ 20) for posttraumatic stress and 27.4% scored above the cut-off point (≥ 14) for depression (Kohrt et al., 2011). This may reflect that fact that data for this study were collected three to four months after high-magnitude earthquakes in April and May 2015 in Nepal (see: D. Sharma, 2015) and aftershocks were occurring during the period of data collection. Eight out of 12 schools from which data were collected were in earthquake-affected areas. People were living in heightened fear of another earthquake. Therefore, the elevated rates of depression and posttraumatic stress found in this study could merely be a reflection of the precarious situation (see: Kane et al., 2017; Sherchan et al., 2017).

4.4.3 Cognitive and Personality Factors

The current study showed that personality traits, except for hypnotizability, did not predict case status in MPI episodes. The associations between cognitive failures, fantasy proneness, emotional contagion and case status were not significant in bivariate as well as multivariable comparisons. To our surprise, cognitive failures, which were the strongest predictor of DEBs as measured by A-DES in the healthy adolescent population study (see: Chapter 2) and were moderately correlated with DEBs (i.e., Pearson correlation (r)=.393, p<.01, 95%CI: 0.30-0.47) in this study, were unrelated to MPI case status. The results were also unexpected in terms of the role of emotional contagion in predicting caseness in MPI. A number

of researchers (e.g., Cardeña, Terhune, et al., 2009; Hatfield, Cacioppo, & Rapson, 1994; Hatfield et al., 2014) have hypothesized that individuals with higher susceptibility to emotional contagion are more likely to be affected in MPI outbreaks. The results of this study did not support this hypothesis. Emotional contagion was not significantly associated with caseness in MPI, either in univariate or multivariate comparisons.

To our knowledge, no previous studies have used the measures of cognitive and personality traits that were used in this study (i.e., cognitive failures, emotional contagion, fantasy proneness) in outbreaks of MPI. Various studies (e.g., Chen, Yen, Lin, & Yang, 2003; Goldberg, 1973; McEvedy & Beard, 1973; Olczak, Donnerstein, Hershberger, & Kahn, 1971; Yasamy, Bahramnezhad, & Ziaaddini, 1999) have assessed other personality traits (i.e., hysteria, neuroticisms, extroversion, hypochondriasis, paranoia) among individuals affected in MPI using the Minnesota Multiphasic Personality Inventory (MMPI) and the Eysenck Personality Inventory (EPI). However, the findings have been inconclusive (Bartholomew, 1994; M. J. Colligan & Murphy, 1982; Harrington, 1998; Sirois, 1999). For example, Colligan and Murphy (1979, 1982) conducted a review of published literature on MPI in work settings and, considering the state of research ("sketchy and inconclusive," (p. 83), concluded that personality factors did sufficiently predict case status in MPI episodes in work settings. Sirois (1999) reviewed studies on MPI outbreaks in schools published over a 20-year period (1973–1993) and noted that casecontrol studies, in general, had not yielded useful results and that studies assessing personality factors in school outbreaks using the MMPI and EPI were inconsistent. Likewise, Harrington (1998) conducted a meta-analytical review of literature on MPI outbreaks in schools and in work settings to determine the factors predictive of case status. The review suggested that among the 20 variables studied, personality factors were the "least important contributors" in predicting

who becomes ill in MPI outbreaks (p. 138). The results of the current study are consistent with the MPI literature in that personality traits, with an exception of hypnotizability, were not significant predictors of case status.

It is important to note, however, that cognitive failures (r=.393, p=.001), fantasy proneness (r=.352, p=.001), and emotional contagion (r=.234, p=.001) were correlated with DEBs as measured by A-DES. This result is consistent with our previous study on a general adolescent population (see: Chapter 2) and also with studies conducted in the West that have consistently found an association between cognitive failures, fantasy proneness and DEBs (see: Giesbrecht, Lynn, Lilienfeld, & Merckelbach, 2008; Merckelbach et al., 1999; Muris et al., 2003; van der Kloet, Merckelbach, Giesbrecht, & Broers, 2014).

Hypnotizability emerged as the strongest predictor of MPI case status among the cognitive and personality trait variables. It was significant in the univariate analysis as well as in multivariable comparisons. The results of this study are also consistent with some previous studies in the West. Hypnotizability was positively correlated with the A-DES (r=.15, p <.05) (Bell, Oakley, Halligan, & Deeley, 2011; Cleveland, Korman, & Gold, 2015; Faith & Ray, 1994; Frischholz et al., 2014; Roelofs, Hoogduin, et al., 2002; Woody & Sadler, 2008), emotional contagion (r=.18, p<.01) (Cardeña, Terhune, et al., 2009), and posttraumatic stress (r=.25, p <.01) (D. Spiegel, Hunt, & Dondershine, 1988; Stutman & Bliss, 1985; Yard, DuHamel, & Galynker, 2008) but not with childhood abuse (Mann, 1992; Nash, Hulsey, Sexton, Harralson, & Lambert, 1993; Putnam, Helmers, Horowitz, & Trickett, 1995; Rhue, Lynn, Henry, Buhk, & Boyd, 1990), depression, or cognitive failures. In contrast with the finding in the West that fantasy proneness and hypnotizability are associated (e.g., Green & Lynn, 2008; Rhue & Lynn, 1989; Silva & Kirsch, 1992), there was no significant association between these factors in this

study (r=.06, p=.42).

As is common practice, hypnotic induction was conducted to assess individuals' level of susceptibility to suggestions (Kirsch, 1997; Lee et al., 1996; Piesbergen & Peter, 2006; Raz, 2007; Tam, Tsoi, Kwong, & Wong, 1982). The term *suggestibility* has been applied to indicate individuals' susceptibility to an "array of phenomena that range from hypnotic responsivity to simple gullibility" (Eisen & Lynn, 2001, p. s57). Hypnotizability and suggestibility may not be equivalent constructs (Kirsch, 1997); however, suggestibility – the ability/susceptibility to follow and to respond to suggestions – is one of the characteristics required for hypnotizability (Bell et al., 2011; Lynn, Laurence, & Kirsch, 2015; Raz, 2007). Further, as noted by H. Spiegel (1997, p. 617), "the more hypnotizable, the greater the suggestibility and the greater the likelihood of uncritical compliance." Highly hypnotizable participants have been shown to be more socially suggestible compared to a low hypnotizability control group (Terhune, Cleeremans, Raz, & Lynn, 2017; Walsh et al., 2014).

To our knowledge, with the exception of (Lee et al., 1996; Tam et al., 1982), no previous studies have assessed the hypnotic susceptibility or suggestibility of children and adolescents affected in MPI (see: Terhune et al., 2017). Lee and colleagues (1996), using the "body sway test" taken from the Children's Hypnotic Susceptibility Scale as a measure of suggestibility, reported a statistically nonsignificant difference between cases and controls on suggestibility (Lee et al., 1996, p. 250). Also, the study by Tam et al. (1982) using the Hypnotic Susceptibility Scale did not find a significant difference between affected and not affected children. The literature on dissociation, however, suggests that people who are hypnotizable or suggestible are more likely to have dissociative experiences (Barrett, 2010; Eisen & Lynn, 2001; Frischholz, Lipman, Braun, & Sachs, 1992). In our previous studies of MPI in Nepal, although we did not

use any psychometric measure to assess suggestibility, analysis of qualitative interviews with affected and non-affected people, case-studies of MPI outbreaks prepared by NGOs, and our field observations of MPI episodes in various schools indicated that girls/women experiencing *chhopne* were highly suggestible (see: Sapkota et al., 2014; Sapkota & Kirmayer, in preparation).

4.4.4 Dissociative Experiences and Behaviors

Results showed that at the level of univariate or simple logistic regression, the dissociative tendency as measured by A-DES and the experience of peritraumatic dissociation as measured by PDEQ each significantly predicted case status. As expected, MPI affected children scored higher on the A-DES and PDEQ than individuals with no such symptoms (Carlson & Putnam, 1993). However, in the multiple logistic regression, only peritraumatic dissociation remained a significant predictor, that is, the predictive power of the dissociative tendency became nonsignificant after controlling for the effects of peritraumatic dissociation. The results indicated that caseness in the MPI outbreaks was associated not with a general tendency to dissociate but with past experience of acute dissociation in response to a traumatic event. While a general dissociative tendency was not the defining trait in MPI outbreaks, there was evidence for the trauma theory of dissociation (Herman, 1992; Nijenhuis & van der Hart, 2011; Putnam, 1997; D. Spiegel & Cardeña, 1991; Van der Kolk, 1996), including: 1) positive correlations between childhood trauma and PDEQ (r=.288, p=.001), childhood trauma and A-DES (r=.229, p=.001), and A-DES and PDEQ; 2) positive association between each of these variables and case status (r_{pb} ranged from .116 to .189, p<.05); and 3) evidence that the PDEQ appeared to mediate the effect of A-DES on case status. Individuals with a higher dissociative tendency are more likely to experience peritraumatic dissociation as a way to cope with psychological distress

during abuse, and that those individuals who are already exposed to acute dissociation are more likely to be affected in MPI outbreaks (i.e., to have panic-like dissociative symptoms) in order to cope with the anxiety/fear produced by the perceived or real threat that triggered dissociation in the index case (see: Fikretoglu et al., 2007; Hagenaars & Krans, 2011; D. Spiegel et al., 1988). Perhaps, as various researchers have hypothesized (e.g., Gershuny & Thayer, 1999; Giesbrecht et al., 2008; Kihlstrom, 1987; Roelofs, Keijsers, Hoogduin, Näring, & Moene, 2002), "dissociation can presumably be automatized and invoked on a habitual basis in response to even minor stressors" (Giesbrecht et al., 2008, p. 618; also see: Kirmayer, 1994) among those who have experienced peritraumatic dissociation repeatedly and have learned to use dissociation as a means of escape from physical and emotional pain.

4.4.5 Limitations

This study has several limitations. First, because the data collection took place during active outbreaks, in some cases, *chhopne* episodes disrupted the data collection process. For example, 73 children in two hypnotic induction sessions could not complete the HGSHS form because several children had *chhopne* episode during hypnotic induction and the process of induction as well as data collection had to be stopped.¹¹ As a result, we ended up with small sample size for the hypnotizability assessment. Second, the sample mainly included females (96.6%), so gender-based comparisons were not possible. However, it should be noted that this was not because of sample selection and recruitment procedure, but because the number of

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¹¹ As an aside, this may indicate both the high hypnotizability of *chhopne* subjects, and some similarity between hypnotic responding and their dissociative symptoms.

affected male students was very low. We recruited all the affected students meeting inclusion criteria from the selected schools, so this gender imbalance reflects the distribution of cases. Third, sampling involved "natural" clusters (i.e., schools), however, the possible effect of cluster sampling was not assessed. It is possible, therefore, that the variance within and between clusters may have influenced the statistical significance of the tests conducted. Fourth, cases were selected based on reports of experiencing at least one *chhopne* episode during the MPI outbreak. No medical examination or psychological evaluation was conducted to identify the cases. Although all the MPI outbreaks assessed had features similar to MPI outbreaks described in the literature and many of the affected students had had medical check-ups on an individual basis that identified no organic basis for the symptoms, it is possible that some of the affected children were suffering from undiagnosed medical illness (i.e., epilepsy), especially the index cases. Fifth, this study was conducted in five districts involving 12 MPI affected schools; however, considering the diverse ethnic and cultural composition of Nepal, the sample and results may not be representative of the whole country. A prospective study involving other ethnic and cultural groups could address generalizability and might provide additional evidence for the etiology of MPI outbreaks.

4.5 Conclusion

We conducted a case-control study of school children in Nepal affected by MPI to test if existing theoretical models of dissociation (i.e., trauma model, current distress model and cognitive and personality factors model) or a tendency to dissociative experiences and behaviors (DEBs) and peritraumatic dissociative experiences could predict case status in MPI episodes. The study examined a wide range of potential predictors of MPI in a sample of affected adolescents with a demographically matched control group during MPI outbreaks. Many of the

predictor variables used in this study had been hypothesized to be implicated in MPI outbreaks, but had never been tested in such a sample. However, none of the models of dissociation proved to be strong predictors of caseness in MPI outbreak; however, some of the variables in each model were found to be significant individual correlates of MPI. Results indicated that adolescents with higher susceptibility to suggestions, living in nuclear families, who had experienced physical abuse or peritraumatic dissociation and had a higher dissociative tendency and higher levels of current psychological distress were more likely to be affected by MPI episodes. Considering the amount of variance explained by each of these variables and the strength of association with case status, these factors, either individually or jointly, were neither necessary nor sufficient to cause MPI outbreaks.

One question that the results of this study raise is why did the experience of *chhopne* show only a small correlation with one of the common measures of DEBs (A-DES) and no meaningful association with the strong predictors of DEBs when the behaviors exhibited by affected students fit with current psychiatric definitions and understandings of dissociation and dissociative disorders (see: Chapter 2)? If MPI is a dissociative phenomenon, then DEBs and their correlates should predict who experiences DEBs in the context of MPI outbreaks. Perhaps dissociative experiences during MPI involve separate processes and mechanisms than in individual cases of dissociative disorders.

The findings from this study have important theoretical significance with respect to understanding the possible causes and correlates of MPI phenomena and may further guide the development of appropriate prevention and intervention strategies for MPI in Nepal and beyond. Overall, as noted by Kirmayer and Santhanam (2001), our results indicate that to understand MPI phenomena, assessment of individual psychological correlates is not sufficient. Some individual

psychological variables appear to be important but key factors remain to be identified. In addition to exploring other psychological factors (i.e., secondary gain, suggestibility, absorption, expectancy, modelling and behavioral mimicry), there is a need to examine social and cultural factors as well as school- and family-related factors. To identify potential factors, local perspectives on the nature, meaning and causes of *chhopne* need to be elicited. Case studies and anecdotal evidence suggest that future research should examine the role of contextual factors in the development of MPI outbreaks, including the rapid social, structural, and cultural changes taking place in Nepal today.

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Chapter 5: Discussion and Conclusion

Mass psychogenic illness is a very common occurrence in Nepal. At least 28 outbreaks have occurred affecting various schools in 2016. Media reports indicate that MPI outbreaks continue to occur in 2017. However, despite the efforts of Nepal government as well as NGOs to identify and manage such outbreaks, numerous schools continue to be affected by the episodes of illness behaviors among the students. It has been suggested (e.g., Gamino, Elkins, & Hackney, 1989) that interventions to manage or prevent MPI must be based on comprehensive understanding of the potential causes and correlates as well as the sociocultural context.

However, because of lack of psychological, anthropological, as well as psychiatric literature on the possible etiology of MPI, neither health workers nor the NGO workers working in the rural areas are well equipped to manage such outbreaks. Recognizing knowledge gap as a part of the problem, we sought to advance our understanding of the potential causes and correlates of MPI through a series of research studies. Three of these studies are reported in this thesis. The overall objective of all three studies was to identify the potential correlates of mass psychogenic illness (MPI) outbreaks in schools and communities in Nepal.

5.1 Summary of the findings

The first study in this thesis (see: Chapter 2) used a mixed methods case-control design to examine the association between spirit possession and common mental disorders (i.e., anxiety, depression and posttraumatic stress disorder) in a rural village of where a cluster of women were suffering from spirit possession. The study found that possessed women reported higher rates of traumatic events and higher levels of symptoms of mental disorder compared to non-possessed

women. Correlational analysis showed that being possessed was strongly associated with having anxiety and PTSD and moderately associated with having depression. The study also identified that cultural belief, suggestibility and modelling influenced the spread of illness behavior, that is, those who believed in witchcraft, who were suggestible and who had witnessed a fellow villager being possessed by the spirit, were more likely to be possessed. While qualitative study suggested that possession was more likely an attempt to cope with and communicate distress caused by difficulties in day-to-day living and other stressors. Therefore, it was concluded that MPI is a multi-dimensional phenomenon that cannot be seen as byproduct of mental disorders.

The second study (see: Chapter 3) used a cross-sectional survey method to identify the potential causes and correlates of DEBs in an adolescent population attending schools in three districts of Nepal were assessed. In this study three causal models of DEBs, namely, (i) childhood trauma, (ii) cognitive processes, and personality traits (i.e., cognitive failures, fantasy proneness, emotional contagion), and (iii) current distress (i.e., quality of life, depression, posttraumatic stress) were evaluated through path analysis. In the final model, these three models were merged to produce a hypothesized integrated model of dissociation, which was tested in the third study. The study found that each of the causal models of dissociation significantly predicted DEBs. In the integrated model, however, only cognitive failures and posttraumatic stress were significant predictors DEBs, suggesting that the effect of other variables on DEBs was mediated by cognitive failures and posttraumatic stress. Simple mediation analysis using posttraumatic stress and cognitive failures as mediators in separate mediation models confirmed the full mediation of effect of childhood trauma on dissociation. The integrated model indicated that there are numerous possible pathways to DEBs; various factors in combination may be

responsible for triggering DEBs. Therefore, it would be too simplistic to assume single factor models in explaining dissociative experiences and behaviors.

The third study (see: Chapter 4) used a case-control design to assess if existing theoretical models of dissociation (i.e., trauma model, current distress model and cognitive and personality factors model) or a tendency to dissociative experiences and behaviors (DEBs) and peritraumatic dissociative experiences could predict case status in MPI episodes. The results were unimpressive in terms of the models predicting case status; none of the models of dissociation proved to be strong predictors of caseness in the MPI outbreaks. However, some of the variables in each model were found to be significant individual correlates of MPI. Results indicated that adolescents with higher susceptibility to suggestions, living in nuclear families, who had experienced physical abuse or peritraumatic dissociation and had higher dissociative tendency and higher levels of current psychological distress were more likely to be affected by MPI episodes.

The research studies reported in this thesis examined a wide range of potential predictors of dissociative tendency and MPI episodes in a sample of women experiencing spirit possession in a community, in a sample of adolescents who had never experienced trance and possession states and among MPI affected adolescents compared to a demographically matched control group during MPI outbreaks. Many of the predictor variables used in this study had been hypothesized to be implicated in MPI outbreaks, but had never been tested in such a sample. Multiple social and psychological correlates of DEBs were identified but none was highly predictive of MPI. The results of these studies therefore cannot clearly delineate why MPI is widespread in schools in Nepal, and why adolescent females are especially affected. For example, physical abuse was a strong predictor of dissociative tendency in the second study and

a predictor of case status in the third. However, the link between physical abuse and the proliferation of MPI episodes in recent years is unclear in context of Nepal because corporal punishment in schools and in families is not a new phenomenon in Nepal, but MPI is. Although spirit possession in individuals has a very long history in Nepal, MPI is a relatively recent phenomenon. For example, van Ommeren and colleagues (2001) studied an MPI episode that occurred in 1999 in one of the Bhutanese Refugees camps in Nepal and reported that they were aware of only three such outbreaks in the country until that time (unfortunately, the authors do not provide the details of these three outbreaks). Referring to a news report in one of the national daily newspapers, *The Rising Nepal*, Greenwald (1996) in his book, *Shopping for* Buddhas, has given a brief account of a possible MPI episode that occurred in mid-1970s in a school in Kakarvitta of Jhapa district where 15 girl-students were having fainting spells. Fainting spells were attributed to affliction by Bandevi (Goddess of the forest) because of cutting down a tree that was believed to be the abode of Bandevi on the school grounds (Greenwald, 1996). Apart from Greenwald's report of a possible MPI in a school and van Ommeren and colleagues' note, there is no documentation of MPI outbreaks in Nepal prior to 1997. In fact, severe beating of children (physical abuse) is now a legally punishable offence in Nepal. Although, as some of our colleagues in Nepal have wryly put it, "child friendly beating" still continues, especially of young to pre-adolescent children who cannot directly confront teachers, severe beating and corporal punishment of children in schools has substantially decreased. If such punishment accounts for the rise of MPI we would have to assume that children, adolescents in particular, have become more intolerant of even less severe physical punishments.

Nepalese culture, family and social structures, and overall development are all in transition. With the rapid expansion of and easy access to mass media (i.e., FM radios, TV,

newspaper and the internet) and mobile communication, younger generations are very much inclined to and are adopting Western styles of being. Family sizes are shrinking from extended/joint to nuclear; traditional social support structures and traditions have either been lost or been replaced by professional organizations (i.e., NGOs) (see: Chase & Sapkota, 2017). Yet, the gender norms that insisted that girls and/or wives do not work outside of the home that existed in Europe in the 19th century (Micale, 2008) still exists in Nepal. Of course, this picture is changing very rapidly in major cities, but not much for young girls in rural villages who are now also exposed to Western ideas, gender norms, and lifestyles in the cities through their education in the school and through mass media, mobile telecommunication and access to internet.

Perhaps, this rapid social change and a sense of relative deprivation is fueling in the spread of MPI outbreaks among young girls in rural areas of Nepal.

5.2 Implications and Suggestions for future research

The findings from these studies have important theoretical implications with respect to understanding the possible causes and correlates of MPI phenomena and may further guide the development of appropriate prevention and intervention strategies for MPI in Nepal and beyond. Overall, the studies clearly indicate that MPI is a multi-dimensional phenomenon that cannot be mapped onto any single psychiatric or psychological diagnostic category nor can any personality trait or form of distress sufficiently explain the vulnerability or resilience to MPI. Further, as suggested by Kirmayer and Santhanam (2001), the results indicate that to understand MPI phenomena in the clinical context, assessment of individual psychological correlates is not sufficient. While some individual psychological variables appear to be important other key factors remain to be identified.

Exposure to childhood adversity does appear to play a role in making some individuals more vulnerable to MPI. Child maltreatment (abuse and neglect) is a grave global problem.

Millions of children are maltreated in United States each year(Hussey, Chang, & Kotch, 2006), along with untold numbers in impoverished countries affected by conflicts, war, and natural disasters. Therefore, identifying various pathways through which childhood adversities and other factors contribute to the development of dissociative disorders and related psychopathology may also help in developing theoretically informed interventions(Cicchetti & Banny, 2014). In addition to exploring other psychological factors (i.e., secondary gain, suggestibility, absorption, expectancy, modelling and behavioral mimicry), there is a need to examine social and cultural factors as well as school- and family-related factors. To identify potential factors, local perspectives on the nature, meaning and causes of *chhopne* need to be elicited. Case studies and anecdotal evidence suggest that future research should examine the role of contextual factors in the development of MPI outbreaks, including the rapid social, structural, and cultural changes taking place in Nepal today.

5.3 Conclusion

As Kirmayer and Santhanam (2001) noted (p.252), "[h]ysteria can be approached as a medical phenomenon and as a social process. The medical perspective seeks to describe diseases and disorders... The social perspective emphasizes the fact that illness occurs to individuals with a personal biography and history, in an interactional matrix that includes families, the health care system and larger social institutions." In this thesis, we have dealt with MPI mainly from a medical (i.e., psychiatric) perspective approaching it as a dissociative phenomenon involving the spread of conversion disorder symptoms in mass. An alternative approach to MPI, emerging

largely from the discipline of anthropology, suggests that the illness behaviors are culturally learned and patterned (Mechanic, 1986; Ram, 2012) and may serve adaptive functions in the sociocultural contexts in which they occur. The symptoms of MPI may operate as modes of communication, idioms of distress, or coping strategies that serve the afflicted individual's ongoing efforts to adapt to and survive in challenging social circumstances (Boddy, 1994; Castillo, 1994; Ward, 1980). As such, these phenomena may represent learned behaviors acquired particularly through gendered socialization (Ram, 2012, 2013).

It has been suggested, for example, that spirit possession may provide women or marginalized subgroups with the means to express distress in contexts where more direct expression is impossible or may have adverse effects (De Jong & Reis, 2010; Halliburton, 2005; Lewis, 1971; Van Duijl, Nijenhuis, Komproe, Gernaat, & De Jong, 2010). Symptoms may allow an individual to draw attention to personal conflict in a socially acceptable way (Kirmayer & Santhanam, 2001; Mark Nichter, 1981; M. Nichter, 2010), while the disavowal of causation and control serves to protect the individual from moral blame by positioning him/her as afflicted and in need of care. At the same time, symptoms like possession may serve as an active coping strategy through their expressive and communicative functions, which mobilize social support and conflict resolution.

Beyond gender-based forms of suffering, MPI may also function as a socially acceptable expression of psychological suffering. For example, while mental illness is highly stigmatized in Nepal, leading many to hide symptoms that they attribute to mental disorders and suffer in silence (Jack & Van Ommeren, 2007), spirit possession is a widely recognized affliction that points to social conflicts and concerns rather than just the health of the individual. Hence, spirit possession may offer a culturally accepted way to express emotional distress.

Historical evidence may also support the relationship between everyday stressors and MPI phenomena. MPI has often been observed during times of social oppression, difficulty, uncertainty, radical social change, and political violence (Igreja et al., 2010; Piñeros, Rosselli, & Calderon, 1998; Van Ommeren et al., 2001; Waller, 2008). It has been proposed, therefore, that in the context of extreme oppression, when all other defenses are overwhelmed or exhausted, MPI symptoms may function as a defense/reaction that is comprehensible in terms of local socio-cultural illness beliefs (Chodoff, 1982; Rosenbaum, 2000).

Future work, using ethnographic and epidemiological methods can explore these social processes as potential causes and mediators of MPI. Ultimately, the series of studies presented in this thesis suggests that only a multi-level, multifactorial model will be able to account for the changing prevalence and distribution of MPI in Nepal. Efforts to develop effective interventions and prevention will therefore have to consider individual, local, and wider societal factors.

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Appendix 1: Instruments Used in the Studies

कोड नं Background Information				
जिल्ला	गाउँ	वडा नं		
विद्यालय	यको नाम			
अन्तरव	ार्ता लिनेको नाम	मिति:		
	ार्ता शुरु गरेको समयः अन्तरवा			
	Questions			
		Options		
Al.	आवश्यकताअनुसार चिन्हलगाउनु होस् ।	पुरुष १		
4.0		महिला २		
A2.	तपाई कृतिवर्षको हुनु भयो होला?	उमेर		
A3.	कतिकक्षासम्म पद्नु भएको छ ?	निम्न माध्यमिक१ माध्यमिक२		
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A4.	जातजाति :	आई.ए वा माथि४		
A4.	ગાતગાત .	ब्राह्मन१		
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A5.	तपाई कुनधर्म मान्नु हुन्छ होला?	अन्य १		
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	발경하다고 그런 회사하다 화로 밝혔다.	मस्लीम ३		
		किश्चियन ४		
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A6.	तपाई पाय गरी घरमा कुन भाषा बोल्नु हुन्छ ?	भाषा(खुलाउने)		
A7.	तपाईको वैवाहिक स्थिति के होला?	अविवाहित १		
		विवाहित २		
		विधवा/विदर ३		
	병이다. 경기 집안되었다면 말하는 말하다.	सम्बन्ध विच्छेद ४		
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A8.	तपाईको परिवारको आर्थीक अवस्था कस्तो छ ?	निम्न वर्ग०१		
		मध्यम वर्ग०३		
	강영 여름을 하는 경이 없는 사람들이다.	उच्च वर्ग ०३		
	조마이어 여기를 모르겠다면서 그리고 있다. 이번			

AJ.	तपाईको परिवारमा मुख्य आय स्रोत के हो ?		कृषि ०१ नोकरी ०२		
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A11.	कृपया तपाईको परिवारको संरचना कस्तो खा	लको छ ?	4434		
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तपाईको लागि जि तल रहेको बाकस	बनका निम्न क्षेत्रह	हरू कत्तिको महत्वपू	र्ण छन् ? हरेक प्रश्नक	उत्तर दिंदा मिल्दो उत्तरः
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ComQol9६. तपाईको स्वास्थ्य अवस्था प्रति तप एकदमै खुशी खुशी छ पाय सन्तर राज्य	ई कत्तिको सन्तुष्ट हनहन्छ ?
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ComQol9७. तपाईले जीवनमा पाउनु भएको उपर एकदमै खुशी खुशी छु प्रायः सन्तुष्ट सन्तुष्ट परि	ख्यीहरू प्रति तपाई कतिको सन्तष्ट इतहरू
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Adolescent Dissociative Experience Scale (ADES)

यी प्रश्नहरूले मानिसहरूको जिवनमा हुने विभिन्न प्रकारका अनुभवहरूको बारेमा सोध्दछ । हरेक प्रश्नकालागि ० देखि १० अंक राखीएको छ जसले ती अनुभवहरू तपाईले कित्तको भोग्नु हुन्छ भन्ने जनाउद छन । यदि तपाईले कहिल्यै भोग्नु भएको छैन भने ० र यदि तपाईले सधै भोग्नु हुन्छ भने १० भन्नु पर्दछ । यदि सधै नभई कहिलेकाहि मात्रै भोग्नुहुन्छ भने, १ देखि ९ विचको अकभन्नु पर्दछ जसले ति अनुभव तपाईले प्राय कित्तको भोग्नु हुन्छ भन्ने कुरालाई सबैभन्दा राम्रोसँग वर्णन गर्दछ ।

ADES १. टि.मि. हेर्न, पहन, वा भिडियो गेम खेल्नमा तपाई यति केन्द्रित हुनुहुन्छ कि तपाईको वरिपरि के भईरहेको छ तपाईलाई थाहाहुदैन । यस्तो अनुभव तपाईलाई कत्तिको	0	T	T	T	T	T	T	T	1	9	9
हुन्छ?							1				1
ADES २. तपाईले दिएको कुनै जांचको नितजा आउछ वा गृहकार्यहरू जांचेको कापी फिर्ता पाउँन हुन्छ तर त्यो जांच वा गृहकार्यहरूको कापी तपाईले कहिले दिनु भएको थियो भन्ने सम्भाना नै हुदैन । यस्तो अनुभव तपाईलाई कितको हुन्छ?	0	٩	٩	m	8	×	Ę	9	7	9	94
ADES ३. तपाईका भावनाहरू गहन(कडा)छन् जुन भावनाहरू तपाईका आफ्ना नै होईनन् भन्ने जस्तो लाग्दछ । यस्तो अनुभव तपाईलाई कत्तिको हुन्छ?	0	9	٩	m	8	×		9	5	9	90
ADES ४. तपाईले कुनै कुरा एउटा समयमा एकदमै राम्रो गर्न सक्नु हुन्छ भने त्यिह कुरा अर्को समयमा गर्ने सक्नु हुन्न । यस्तो अनुभव तपाईलाई कित्तको हुन्छ?	0	9	2	w	8	x	Ę	9	,U	9	90
ADES ४. मानिसहरूले तपाईले केहि कुरा गरेको वा भनेको बताउँछन् जसको तपाईलाई सम्भाना नै हुदैन । यस्तो अनुभव तपाईलाई कत्तिको हन्छ?	0	9	O.	m	8	×	4	و	5	9	90
ADES ६ तपाई आफ्नै संसारमा हराएको महसुस गर्नु हुन्छ र तपाइलाई आफ्नो वरिपरिका चिजहरू वास्तविक तभएको जस्तो लाग्दछ । यस्तो अनुभव तपाईलाई कत्तिको हुन्छ?	0	9		· m	8	×	w	.9	r.	٩	90
ADES ७. तपाई केंहि कुरा गरिसके वा गर्ने सोच मात्रै वनाएको थिए भन्ने बारेमा भुक्किने गर्नुहुन्छ । यस्तो अनुभव तपाईलाई कतिको हुन्छ?	0	9	٩	AU.	8	×		9.	и	٩	90
ADES द. घडि हेरेपछि समय वितेको तपाईलाई थाहा नुछ तर त्यस वितेको समयमा के भयो भन्ने कुराको पाईलाई सम्भना हुदैन । यस्तो अनुभव तपाईलाई कित्तको नुछ?	0	9	٠,٠	m	8	x		9	L.	0	90

ADES ९. तपाईले आफ्नो मस्तिस्कमा त्यस्ता आवाजहरू		1	. 1	T	T	T	T	T	T	Ť	T
सुन्तु हुन्छ जुन बास्तविक होईनन । यस्तो अनुभव तपाईलाई कत्तिको हुन्छ?	0	9			1				9 8		90
ADES १०. जब तपाई आफुले नचाहेको ठाँउमा जान		1	-	1	1	t	†	+	+	+	+
हुन्छ , तब तपाई आफनो मन डुलाउन थाल्नु हुन्छ । यस्तो अनुभव तपाईलाई कत्तिको हुन्छ?	0	9	9	W	18	,				. 9	90
ADES ११. तपाईलाई आफू भुठों बोल्न र अभिनय गर्न यित माहिर छु कि आफुलाई नै त्यसको विश्वास दिलाउन सक्छु जस्तो लाग्दछ । यस्तो अनुभव तपाईलाई कित्तको हुन्छ?	10	9	2	*	8	×			5	9	90
ADES १२ तपाई केहि काम गर्दागर्दै विचमै 'विजंभोको जस्तो महसुस गर्नु हुन्छ ।यस्तो अनुभव तपाईलाई कित्तको हुन्छ?		9	2	w	8	×		g	5	9	90
ADES १३. तपाईले ऐनामा आफुलाई नै चिन्न सब्नु हुन्न ।यस्तो अनुभव तपाईलाई कत्तिको हुन्छ?	0	9	2	a	8	×	Ę	9	5	9	90
ADES १४ तपाईले आफु किंह गईरहेको वा केंहि गरिरहेको फेलापानुं हुन्छ तर किनभनेर थाहा हुदैन ।यस्तो अनुभव तपाईलाई कितको हुन्छ?	0	٩	2	m	8	×	ę	و	5	9	90
ADES १५. तपाई कुनै ठाउँमा पुगेको हुनु हुन्छु तर तपाई त्यहाँ कसरी पुग्नु भयो भन्ने थाहाँ हुदैन । यस्तो अनुभव तपाईलाई कत्तिको हुन्छ ?	0	9	2	*	8	×	ę	o	5	9	90
ADES १६. तपाईमा त्यस्ता सोचाईहरू छन् जुन् बास्तवमा तपाईका आफ्ना होइनन् जस्तो लाग्दछ । यस्तो अनुभव तपाईलाई कत्तिको हुन्छ?	0	٩	٩		¥	, ,	ę	9	5	9	90
ADES १७ तपाईले आफ्नो शारिरिक दुःखाईहरू आफै हटाउन सक्नु हुन्छ । यस्तो अनुभव तपाईलाई कत्तिको हुन्छ?	0	9	2	m ·	8	×	Ę	9	5	9	90
ADES १८. कुनै कुरा साच्चिकै भएको हो वा तपाईले त्यसको सपना मात्रै देखेको या सोचेको मात्रै हो भन्ने कुराको तपाईलाई थाहा हुदैन । यस्तो अनुभव तपाईलाई कित्तको हुन्छ?	0	9	2		8	¥	· e	9	. n	٩	90
ADES १९. तपाई केहि कुरा गलत हो भनि थाहा हुँदाहुँदै मिन अथवा गर्ने ईच्छा नहुदा पनि गर्ने गर्नु हुन्छ । यस्तो अनुभव तपाईलाई कत्तिको हुन्छ?	0	9	2	ą	8	×	w	G	5		90

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ADES २०. कहिले काहि तपाई यति भिन्न व्यवहार गर्नु हुन्छ कि तपाई अरु नै कोहि व्यक्ति जस्तो हुनुहुन्छ भनेर मानिसहरूले तपाईलाई भन्ने गर्दछन् । यस्तो अनुभव तपाईलाई कत्तिको हुन्छ?	0	9	٦		8	×		9	5.	٩	90
ADES २१ तपाई लाई आफ्नो दिमाग भित्र पर्खाल भित्ताभएको जस्तो महसुस हुन्छ । यस्तो अनुभव तपाईलाई कृत्तिको हुन्छ?	0	٩	2	or	8	×	O.F.	9	5	0	90
ADES २२. तपाई लेख, चित्र, वा पत्रहरू फेलापानुं हुन्छ जुन तपाईले नै गरेको हुनु पर्दछ तर तपाईलाई त्यसको सम्फना हदैन । यस्तो अनुभव तपाईलाई कत्तिको हुन्छ?	0	٩	2	m ·	¥	X	ur.	9	5	٩	90
ADES २३. तपाइंलाई तपाइ भित्र केहि चिज छ जसले तपाईंलाई गर्न मन नलाग्ने कुरा गर्न लगाउँछ जस्तो लाग्दछ । यस्तो अनुभव तपाईंलाई कत्तिको हुन्छ?	0	9	2	34	8	¥	ę	9	5	٩	90
ADES २४ तपाईले केहि कुरा सम्मेको मात्रै हो वा त्यो साँच्यै नै तपाईलाई भईरहेको छ भन्ने कुरा छुट्याउन सक्नु हुन्न । यस्तो अनुभव तपाईलाई कत्तिको हुन्छ?	0	٩	٩	m	8	¥	e .	9	5	٥.	90
ADES २४. तपाई आफु आफ्नो शरिर बाहिर उमिएर अरु कोहि व्यक्तिले जस्तै आफुलाई नै हेरि रहेको महसुस गर्नु हुन्छ । यस्तो अनुभव तपाईलाई कत्तिको हुन्छ?	0	٩	9	av.	8	X	4	9	5	٩	90
ADES २६. परिवार तथा साथीहरू सँगको तपाईको सम्बन्धमा अचानक परिवर्तनहरू आउँदछन् तर किन भनेर तपाईलाई थाहा हुदैन ।यस्तो अनुभव तपाईलाई कित्तको हुन्छ?	0	٩	۹.	W.	8	У.	Gar.	9		٩	90
ADES २७. तपाईलाई तपाईको बितेको समय रहस्यमय भएको जस्तो र त्यसका केहि भाग हराएको जस्तो महसुस हुन्छ ।यस्तो अनुभव तपाईलाई कत्तिको हुन्छ ?	0	٩	2	m.	8	×	&	9	5	٩	90
ADES २८ तपाई आफ्ना खेलौनाहरू या गुडियाहरूमा यति तिल्लन हुनुहुन्छ कि तपाईलाई तिनिहरू जिवित भएको जस्तो महसुस हुन्छ । यस्तो अनुभव तपाईलाई कित्तको हुन्छ?	0	9	2	nr ·	8	×	C.	9	15	0	90
ADES २९. तपाईलाई तपाई भित्र विभिन्न मानिसहरू भएको जस्तो महसुस हुन्छ । यस्तो अनुभव तपाईलाई कत्तिको हुन्छ?	0	9	2	m	8	X		9	5	9	90
ADES ३० तपाईलाई आफ्नो शरिर आफ्नो हो जस्तो महसुस हुदैन ।यस्तो अनुभव तपाईलाई कत्तिको हुन्छ ?	0	9	2	m	8	×	4	9	5	9	90

Creative Experience Questionnaire (CEQ		30.00
CEQ १ तपाईले खेल्ने पुतली, गुडिया र अन्य जीवजन्तुका खेलौना साँच्यैको जीवित वस्तुहरू हुन् भनि सम्भीन हुन्छ ?	हो	होइन
CEQ २ सुनेका कथाका पात्रहरू जस्तैः परि/अप्सारा, राक्षस, बोल्ने-हिडँडुल गर्ने, जनावरहरू आदि वास्तवमा नै पाइन्छन् भनि दृढ विश्वास गर्नु हुन्छ ?	हो	होइन
CEQ ३ तपाईको आफ्नै काल्पना गरेर बताएको साथी वा जनावर छन ?	थियो	थिएन
CEQ ४ तपाईलाई कथा वा चलचित्रका मुख्यपात्रहरू आफुसँग सम्बन्धीत जस्तो लाग्छ ?	हो	होइन
CEQ ५. कहिले कॉहि तपाई आफु कोहि अर्के व्यक्ति (जस्तै: राजकुमारी, अनाथ व्यक्ति आदि) हैं भन्ने भावना आउँछ ?	हो	होइन
CEQ ६ तपाईका आमा-बुबा, हजुरबुबा-हजुरआमा, दाइ-दिदीहरूले तपाईलाई कल्पनामा इब्न (दिउँसै सपना देखा) प्रोत्साहन गर्नु हुन्छ ?	हो	होइन
CEQ ७ तपाई प्रायजसो एक्लो महसुस गर्नु हुन्छ ?	हो	होइन
CEQ ८. तपाईले तपाईको समय बाजा गाजा बजाउन, नाँच्न, नाटक गर्न, र/वा चित्र बनाउनमा बिताउन् हुन्छ ?	हो	होइन
CEQ ९ तपाई आधा दिनभन्दां बढि जसो समय (दिउँसोको समय) कल्पना गरेर बिताउँन हुन्छ ।	हो	होइन
CEQ १० तपाईको आफ्नो कल्पनामा स-साना कुराहरूको विवरण हुन्छन् भन्ने करा तपाईका धेरै साथीहरू र/वा आफन्तहरूलाई थाहा छैन ।	हो	होइन
CEQ ११. तपाईका प्राय कल्पनाहरू यस्ता हुन्छन् कति तपाईलाई साच्चिकै भएको जस्तो लाग्दछ ।	हो	होइन
CEQ १२. तपाईका प्राय कल्पनाहरू एउटा राम्रो चलचित्र जस्तै रोचक हन्छन्।	हो	होइन
CEQ १३ धेरै पटक तपाई कुनै घटना केवल कल्पना मात्र हो कि वास्तविकतामा नै घटेको थियो भनि भूक्किने गर्नुहुन्छ ।	हो	होइन
CEQ १४. तपाईलाई कहिल्यै पनि अल्छि लाग्दैन किनभने अल्छि लाग्न थाल्ने वित्तिकै तपाई कल्पना गर्न थाल्नु हुन्छ ।	हो	होइन
CEQ १४. कहिले कॉहि तपाई अरु व्यक्ति जस्तै व्यवहार गर्नथाल्नु हुन्छ रआफु उक्त व्यक्तिसँग पूर्ण रूपले सम्बन्धीत जस्तै लाग्दछ ।	लाग्दछ	लाग्दैन
CEQ १६ जब तपाई आफ्नो बाल्यकाल सम्फन् हुन्छ तब तपाईलाई तपाईले बिताएका क्षेणहरू प्रस्ट रूपमा याद आउँछन् ।	आउछ	आउदैन
CEQ १७ तपाईलाई तीन वर्ष हुनुभन्दा अगाडिका धेरै घटनाहरू याद छन् ।	छ	छैन
CEQ १८. जब तपाई टेलिभिजनमा कुनै हिसाका घटना देख्नु हुन्छ, तब तपाई त्यसमा एकदमै भिज्नु हुन्छ र तपाईलाई धेरै दुःख लाग्दछ		होइन
CEQ १९. जब तपाई चिसो ठाउँमा गएको वा चिसो वस्तुको बारे सोच्नु हुन्छ तब बास्तवमा नै तपाईलाई एकदम चिसो अनुभव हुनथाल्छ ।	हो	होइन

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हुन्छ	हुँदैन
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हुन्छ	हुँदैन
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	हुन्छ हुन्छ हुन्छ

The Cognitive Failures Questionnaire (CFQ)

तलका प्रश्नहरूसाना-तिना गल्तीहरूका बारेमा हुन् जुन समय समयमा सबैले गरिरहेका हुन्छन् तर ती मध्ये केहि कसैलाई अरुलाई भन्दा धेरै नै हुने गर्दछन् । यी गल्तीहरू तपाईको विगत ६ महिनामा कत्तिको भयो भन्ने बारे जानकारी पाउन हामी इच्छुक छौ । कृपया उपयुक्त अकमा गोलो लगाउनुहोला ।

	सधै जसो	धेरै जसो	कहिले काहि	धेरै कम	कहिल्यै पनिहुदैन
CFQ १ के तपाईले केहि पह्नु हुन्छ र पह्दा खेरी ध्यान निदई कन पढेकाले फोरी पह्नै पर्छ भन्ने लाग्ने गरेको छ?	8	ą	?	9	0
CFQ २ के तपाई आफ्नो घरको एउटा ठाउँबाट अर्को ठाउँ किन जानु भयो भन्ने बारे बिसिएको पाउनु हुन्छ ?	8	à	?	٩	0
CFQ ३ के तपाईले सडकमा भएका संकेत ध्यानदिन हुदैन ?	8	3.	٦.	9	0
CFQ ४ के तपाई अरुलाई बाटो देखाउँदा कता दायाँ र बायाँ कता हो भनी अल्मलिनु भएको पाउँनु हुन्छ ?	. 8	3	3	٩	0
CFQ ५ के तपाई अरु व्यक्तिहरूसँग ठोक्किन हुन्छ ?	8	3	. 2	9	0.
CFQ ६ के तपाईले बत्ति या आगो निभाए वा निभाईन अथवा ढोका बन्द गरे वा गरिन भन्ने बारे बिर्सने गरेको पाउँनु हुन्छ ?	8	3	3	9	
CFQ ७ के तपाई नयाँ व्यक्तिहरू सँग भेट गर्दा उनिहरूको नाम याद गर्नसक्नु हुन्न?	8	3	۶ ۲	٩	0
CFQ ८ के तपाई केहि भन्नु हुन्छ र पछि तपाईले भनेका कुरा अरुले अपमानजनक रूपमा लिन सक्छन् भन्ने महसुस गर्नु हुन्छ ?	8	3	٦ .	9	0
CFQ ९ के तपाईले अरु कुनै काम गरि रहेको समयमा कसैले तपाईसँग बोलेमा सुन्नुहुन्न?	8	3	?	٩	0
CFQ १० के तपाई भानक रिसाउन हुन्छ र पछि पछुताउनु हुन्छ	8	3	3	٩	0
CFQ ११ के तपाई जरुरी पत्रहरूको जवाफ धेरै-दिन सम्म दिन हुन्न?	8	3	.5	٩	0
CFQ १२ के तपाई आफुलाई बाहा भएको तर धेरै नहिड्ने बाटोमा कुन मोड लिने (कुन बाटोमा जाने भन्ने कुरा) बिसने गरेको गउनुहुन्छ ?	X	3	3	٩	0
CFQ १३ के तपाई पसलमा आफुलाई चाहेको सामान (त्यही नै भएपनि) देख्न सक्नु हुन्न?	8	ą	٦ .	9	ó
CFQ १४ के तपाई आफुले कुनै शब्दको सिंह प्रयोग गरे की गरेन भन्ने बारे अचानक सोच्न थाल्नु भएको पाउनु हुन्छ ?	8	3	2	9	0
CEO OU -	8	3	٦,	9	0

कोड नं

CFQ १६ के तपाई आफ्नो कुनै काम वा भेटधाटको लागि तोकेको समय भुल्ने गरेको पाउनु हुन्छ ?	8.1	3 "	3	٩	0
CFQ १७ के तपाईले पत्रिका वा किताब जस्ता सामान कहाँ राख्नु भयो भन्ने कुरा बिर्सने गर्नुहुन्छ ?	٧	3	٦.	٩	0
CFQ १८ के तपाईले भुक्किएर राख्न पर्ने सामान फाल्ने र फाल्न पर्ने सामान राख्ने गरेको पाउनुहुन्छ ? जस्तै : सलाईको डिब्बा फाल्ने र प्रयोग गरी सकेको सलाईको काटी खल्तिमा राख्ने ?	8	4	2	٩	o
CFQ १९ के तपाई केहि सुनिरहनु पर्ने बेला (जस्तै शिक्षकले पढ़ाई रहेको बेला) दिउँसै सपना देख्ने गर्नुहुन्छ ?	8	m.	?	٩	0
CFQ २० के तपाई व्यक्तिहरूको नाम विसने गर्नुहुन्छ ?	8	3	?	9	0
CFQ २१ के तपाई घरमा एउटा काम गर्न थाल्नु हुन्छ र (थाहा नपाइकन) अर्को काममा अलमलिनु हुन्छ ?	8	ŧ	२	9	0
CFQ २२ के तपाईले आफ्नो जिब्बोको टुप्पामा आए पनि केंहि कुरा सम्भिन नसकेको पाउनु हुन्छ ?	8	. 3	. ?	٩.	0
CFQ २३ के तपाई पसलमा के किन्न आए भन्ने विर्सिएको पाउनुहुन्छ ?	٧	ą	?	. 9	0
CFQ २४ के तपाईले सामानहरू हातबाट खसाल्ने गर्नुहुन्छ ्र	8	3	2	٩	0
CFQ २४ के तपाईले केही कुरा भन्न खोज्दा केहि पनि सोचन नसकेको पाउनुहुन्छ ?	8	à	3	9	0

The Emotional Contagion Scale (ECS)

यस प्रश्नावलीले विभिन्न परिस्थितिमा आउने विभिन्न किसिमका भावनाहरू तथा व्यवहारहरूको मापन गर्दछ । यसमा कुनै सिंह वा गलत उत्तर हुदैन । त्यसैले आफ्नो उत्तर सक्दो इमान्दारी पूर्वक दिनुहोला । यसको परिणाम पूर्ण रूपले गोपनिय रहने छ । म हरेक प्रश्न पढेर तपाईलाई सुनाउछु र तपाईलाई सबैभन्दा सुहाउदो वा मिल्दो उत्तर भन्नुहोला। कृपया हरेक प्रश्नको उत्तर ध्यानपूर्वक दिनुहोला । धन्यवाद ।

निम्न संकेतहरू प्रयोग गर्नुहोस् :

- ४. सधै = मलाई सधै हुने गर्दछ ।
- ३. प्रायः = मलाई प्रायःजसो हुने गर्दछ ।
- २. कहिले काहि = मलाई कहिले काँहि हुने गर्दछ।
- १.कहिल्यै नहने = मलाई कहिल्यै पनि हदैन ।

	सधै	प्राय:	कहिले काहि	कहिल्यै नहुने
ECS १ यदि तपाईले कुराकानी गरी रहेको व्यक्ति रुन थालेमा तपाईका आखाँ रसाउँछन । यस्तो तपाईलाई कत्तीको हुन्छ ?	8	ą	٦	9
ECS २ तपाईले उदास महसुस गर्दा प्रशन्न व्यक्तिसँग भन्नु भयो भने त्यसले तपाईलाई खुसी बनाउँदछ ।यस्तो तपाईलाई कत्तीको हुन्छ ?	8	3	2	٩
ECS ३. कोहि व्यक्तिले तपाईलाई न्यानो मुस्कान दिएमा, तपाई पनि उसलाई मुस्कान फर्काउँनु हुन्छ र भित्र न्यानोपनको अनुभव गर्नु हुन्छ । यस्तो तपाईलाई कत्तीको हुन्छ ?	¥	a	٦	9
ECS ४. यदि मानिसहरूले आफ्ना प्रियजनहरूको मृत्युको बारेमा कुरा गरेमा तपाई भित्र दुःखले भरिएर आएको महसुस गर्नु हुन्छ । यस्तो तपाईलाई कत्तीको हुन्छ ?	8	av.	2	9
ECS १ यदि तपाईले समाचारमा रिसाएको अनुहारहरू देखेमा तपाईको कुम काँध कस्सीएर आउँदछ र तपाईले तपाईको बगरा किट्न थाल्नु हन्छ । यस्तो तपाईलाई कत्तीको हन्छ ?	8	3	2	9
ECS ६. जब तपाईले मन पराएको व्यक्तिको आखाँमा हेर्नु हुन्छ, तपाईको दिमाग प्रेमका सोचले भरिन्छ । यस्तो तपाईलाई कत्तीको हुन्छ ?	¥	3	٦.	٩.
ECS ७. रिसाहा व्यक्तिहरूको वरिपरि वस्न तपाईलाई दिक्क लाग्छ ।यस्तो तपाईलाई कत्तीको हुन्छ ?	8	à	3	9
ECS = समाचारमा पीडित व्यक्तिहरूको डराएको अनुहार हेर्दा उनिहरूले कस्तो महसुस गरिरहेका होलान् भन्ने कुराको कल्पना तपाई कत्तीको गर्नु हन्छ ?	8	3	۲	9
ECS ९. मैले मन पराएको व्यक्तिले मलाई नजिकबाट समात्वा मेरो मन पग्लिन्छ । यस्तो तपाईलाई कत्तीको हुन्छ ?	8	3	2	٩

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ECS १०. रिसाएर क्रगडा गरेको सुनेमा तपाई तनाव महसुस गर्नु	8	3	3	٩
न्छ । यस्तो तपाईलाई कत्तीको हुन्छ ? CCS ११. खुसी व्यक्तिहरूको वरिपरि बस्दा तपाईको दिमाग पनि खुसीका ओचाईले भरिएर आउँदछ । यस्तो तपाईलाई कत्तीको हुन्छ ?	8	Đ,	3	9
ताचाइल भारएर आउपछ । परता पान्याच्याचाइल भारएर आउपछ । परता पाईलाई छुँदा तपाईलाई केहि ECS १२ तपाईले मन पराएको व्यक्तिले तपाईलाई छुँदा तपाईलाई केहि होहि भएको महसुस गर्नु हुन्छ । यस्तो तपाईलाई कत्तीको हुन्छ ?	8	3	3	9
हाह भएको महसुस पर्नु हुन्छ । यस्तो तपाई वस्दा तपाई पनि तनाव ECS १३. तनाव भएका व्यक्तिहरूको बरिपरि बस्दा तपाई पनि तनाव भएको महसुस गर्नु हुन्छ । यस्तो तपाईलाई कत्तीको हुन्छ ?	8	3	2	٩
ECS १४. उदास चलचित्रहरू हेदा तपाइ रुन गनु हुन्छ । यस्ता	8	3	2	٩
तपाईलाई कतीको हुन्छ ? ECS १४ कुनै बच्चा दुखेर चिच्याएको आवाज सुन्दा तपाई आत्तिने गर्नु हुन्छ । यस्तो तपाईलाई कत्तीको हुन्छ ?	8	3	?	9

Depression Self Rating Scale (DSRS)

DSRS 1: तपाई पहिले जित चिजहरू वा क्राहरू चाहनु हुन्थ्यो अहि उदाहरणको लागि तपाई पहिले मामाघर जानु हुँदा जित खुशी हुने गर्न	
भन्दा त्यति नै खशी हुने गर्नु हुन्छ।	हुन्या जहिल पान मानावर जान
पहिले जित पटक्कै चाहन्न	A
पहिलेको प्रज्य कम नाउन्य	
पहिलेको भन्दा कम चाहन्छु पहिलेको जितकै चाहन्छु	
DSRS 2: तपाई कत्तिको राम्रोसँग सुत्न (निदाउन) सक्नु हुन्छ ? कहिल्यै पनि निदाउन सक्दिन	
कहिलेकाहि निदाउन सक्छ संधैजसो निदाउन सक्छ	9
संधैजसो निदाउन सक्छ	
DSRS 3: तपाईलाई कतिको रून मन लाग्छ ?	
कहिल्यै पनि रुन मन लाग्दैन	0
कहिलेकाहीं रुन मन लाग्छ	9
धेरैजसो रुन मन लाग्छ	ર
DSRS 4: तपाइँलाई कत्तिको खेल्न मन लाग्छ ?	기상 회장 시기 등등 일반
कहिल्यै पनि खेल्न मन् लाग्दैन	
선생이라 마이에게 가장 그렇게 하고 되었다면 하는데 되지? 요즘이는 이 없어 가지가 되었다고 없었다.	
	그렇게 하게 있는 그는 그렇지 않는다.
DSRS 5: तपाईलाई कत्तिको भाग्न मन, लाग्छ ? (जहाँबाट पनि जस्तै	
कहिल्यै पनि भाग्न मन् लाग्दैन	
कहिलेकाहीं भाग्न मन लाग्छ	
धेरैजसो भाग्न मन लाग्छ	3
DSRS 6: तपाईको पेट कत्तिको दुस्ने गर्छ ?	
कहिल्यै पनि दुख्दैन	0
कहिलेकाही दुख्य	9
धेरैजसो दुख्य	3
DSRS 7: तपाईलाई आफू कतिको जाँगरिलो छु जस्तो लाग्छ ?(उदाहर नथाक्ने वा धेरै बेर पहन सक्ने आदि)	रणको लागि धेरै वेर काम गर्दा पनि
कहिल्यै पनि लाग्दैन	0
कहिलेकाहीं लाग्छ	
धेरैजसो लाग्छ	
DSRS 8: तपाइँलाई खानेकरा देख्दा कत्तिको खाउँखाउँ लाग्छ ?	경향 회장 되는 기 되었다.
कहित्यै पनि बाउँबाउँ लाग्दैन	
कितिकारी बाउँबाउँ लाग्छ	
धेरैजसो बाउँबाउँ लाग्छ	

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그 이 이렇게 되는 것이 되는 것이 되는 것이 하는 것이 모든 것이 되었습니다. 그런 사람이 없는 것이 없다.	
DSRS 9: कसैले तपाईलाई वा अरु कसैलाई हेप्दा वा होच्याउँदा उह	लाई तपाईले आफ्नो कुरो कत्तिको
वुभाउन सक्नु हुन्छ ?	
कहिल्यै पनि सक्दिन	Q
कहिलेकाहीं सक्छ	٩
कहिलेकाहीं सक्छु धेरैजसो सक्छु	9
DSRS 10: तपाईंलाई आफ्नो जीवन कत्तिको वेकार जस्तो लाग्छ ?	
कहिल्यै पनि बेकार लाग्दैम	0
कहिलेकाहीं बेकार लाग्छ	9
धेरैजसो वेकार लाग्छ	
DSRS 11: तपाईंलाई आफूले गरेको कामहरू कतिको राम्रो लाग्छ ?	
कहित्यै पनि राम्रो लाग्दैन	
कहिलेकाहीं राम्रो लाग्छ	
धेरैज्सो राम्रो लाग्छ	
DSRS 12: आफूले गरेको कामकुराहरूमा तपाई पहिले जित खुशी ह	
हुने गुर्नु हुन्छ ?	지기는 학생들이 활성했다.
कहिल्यै पनि खुशी हुन्न	
कहिलेकाहीं खुशी हुन्छ	
धेरैजसो खेल्न खुशी हुन्छु	
DSRS 13: तपाईंलाई आफ्नो परिवारसँग कुराकानी गर्न कत्तिको म	
कहिल्यै पनि मन लाग्दैन	
कहिलेकाहीं मन लाग्छ	
धेरैजसो मन लाग्छ	٦.
DSRS 14: तपाईले नराम्रा वा डरलाग्दा सपनाहरू कत्तिको देख्ने गर	
कहिल्यै पनि देख्दिन	
कहिलेकाहीं देख्यु	
धेरैजसो देख्यु	٦
DSRS 15: तपाईलाई आफू कित्तको एक्लो छु जस्तों लाग्छ ?	
कहित्यै पनि एक्लो लाग्दैन	이 그렇게 되어 있는 것입니다. 그렇게 그렇게 그렇게 되는 것 같아. 그리고 있어 그렇게 되는
कहिलेकाहीं एक्लो लाग्छ :	
धेरैजसो एक्लो लाग्छ	. 3
DSRS 16: तपाईलाई दुःख लागेपछि खुशी हुनलाई कितको समय ल	ाग्छ ?
धेरै समय लाग्छ	
अलिअलि समय लाग्छ	. 1
छोटो समया लाग्छ	. ?

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कहल्य पान दुःख लाग्दन ० किलोकाहीं दुःख लाग्छ १ धेरैजसो दुःख लाग्छ २ DSRS 18: तपाईलाई धेरै कुरामा आफ्नो ईच्छा हराएको जस्तो लाग्छ शजस्तैः रुचि, रहर वा चाहना कहिल्यै पनि लाग्दैन ० किलोकाहीं लाग्छ १ धेरैजसो लाग्छ १	DSRS 17: तपाईलाई सहनै	नसक्ने गरी (असाध्यै)	कत्तिको दुःख लाग्छ	17	
धेरैजसो दुःख लाग्छ २ DSRS 18: तपाइलाई धेरै कुरामा आफ्नो ईच्छा हराएको जस्तो लाग्छ शजस्तैः रुचि, रहर वा चाहना कहिल्यै पनि लाग्दैन ० कहिलेकाहीं लाग्छ १ धेरैजसो लाग्छ	कहिल्यै पनि दुःख लाग्दैन			0	
DSRS 18: तपाईलाई धेरै कुरामा आफ्नो ईच्छा हराएक्रो जस्तो लाग्छ शजस्तैः रुचि, रहर वा चाहना कहिल्यै पनि लाग्दैन				9	
कहिल्ये पनि लाग्देन	धेरैजसो दुःख लाग्छ			2	
धेरैजसो लाग्छ	कहिल्य पनि लाग्देन			0	1 - 4 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -
			7		71 5000
성보다 화장 속으로 하면 되었다고 하는데, 말라면 하다라면 없는데 없다.					
	학교를 잃었다. 그 회사인			점점 육이 다	

Immediate Reactions and Experiences Questionnaire (PDEQ)

तलको टेवलमा कुनै पनि (दुःखद) घटना पर्दा त्यसको लगतै पछि त्यसको घटनामा पर्ने मानिसहरूले अनुभव पर्ने सक्ने भावना /पीडा समस्याका बारेमा तल उत्लेख गरिएको छ । तपाई त्यो । त्यस्तो (दुःखद) घटनामा परेको बेला त्यसको लगतै पछि (घटना सिकए पछि) तल उल्लेख गरिएका कुन कुन भावना /पीडा समस्याको अनुभव महशुस गर्नु भयो १ उपयुक्त ठाउँमा ठिक लगाउनु होस् । यदि उल्लेख गरिएका कुनै कुरा तपाईले अनुभव गर्नु भएको थिएन भने "भएन" भन्नेमा ठीक लगाउनु होस् ।

	भएन	अलि अलि भयो	केहि हद सम्म भयो	धेरै भयो	अत्याधिक भयो
 त्यस्ता क्षणहरु थिए जुन बेला के भइरहेंको थियो मेरो ध्यान नै थिएन र मेरो दिमाग खाली भएको थिए अथवा जे भईरहेको थियो त्यसमा आफु सहभागि नभएको जस्तो महश्स भएको थियो। 	9	7	1	Y	¥
 सबै कुरा आफै भई रहेको थियो । मैले जे गरिरहेको थिए त्यो मैले चाहेर गरिरहेको थिएन वा मेरो नियन्त्रणमा थिएन । 	٩	3	3	¥.	¥
 मेरो समयको चेतना/बुकाई परिवर्तन भयो । सबै कुरा सुस्त गतिमा भई रहेको छ जस्तो भयो । 	q	٩	3	¥	X
 अ भैरहेको थियो त्यो अवास्तविक लाग्यो, जस्तो की मैले सपना देखिरहेको छु अथवा कुनै फिल्म वा खेल खेलि रहेको छु । 	٩	٩	3	¥	¥
प्र. मैले आफुलाई जे भइरहेको थियो त्यो एउटा दर्शकले किहबाट हैरिरहेको जस्तो महंशुस भयो जस्तो कि म त्यो घटनाम उिडरहेको छु वा एउटा बाहिरी व्यक्तिले भी हैरिरहेको छु ।	٩	3	3	¥	¥
६ त्यस्ता क्षणहरु थिए जब मेरो आफ्नै शरीर प्रतिको बुफाई बिग्रेको वा परिवर्तन भएको जस्तो लाग्यो । म आफ्नै शरीरबाट अलगिएको जस्तो लाग्यो वा आफ्नो शरीर अवास्तविक रुपमा सानो वा ठुलो लाग्यो ।	٩	3	9	¥	¥
 अरूलाई जे भइरहेको थियो त्यो मलाई नै भइरहेको जस्तो महशुस भयो । मलाई कुनै खतरा थिएन तर म खतरामा परेको छु जस्तो लाग्यो । 	٩	٦	1	¥	¥

कोड नं

 त्यसबेला मलाई बाहा नभएका ब्रस्ट थुप्रै कुराहरू भएका रहेछन् विशेष गरी त्यस्ता कुराहरु जुन 	9	lank.	1	¥	¥
सामान्यतया म ख्याल राख्ने गर्थे भन्ने थाहा पाउदा म अचम्म परे।					11/1
९ मैले दुविधा महशुस गरे, जस्तो कि त्यस्ता क्षणहरू थिए जुन बेला मलाई त्यहा के भइरहेको थियो भन्ने बुभन गाडो भईरहेको थियो ।	9.	. 3	1	Y	X
१० मैले आफु हराएको जस्तो महशुस गरे , जस्तो कि त्यस्ता क्षणहरु थिए जुन बेला म कहां थिए वा कित बजेको थियो भन्ने कुरा मलाई थाहा भएन ।	٩	3	1	¥	¥

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	-	-	•	-	,

Child PTSD Symptom Scale (CPSS)

अब म बालबालिकाहरूले दु:खद घटना पछि के कस्ता अनुभव गर्दछन् भन्ने बारेमा केहि प्रश्नहरू सोध्न गईरहेको छु ।

CPSS-A तपाईको जीवनमा आईपरेको सबभन्दा दु:खद् घटना कुन होला ।उदाहरणको लागि तपाईको परिवारका सदस्यहरूलाई कसैले हातपात ग कसैलाई आक्रमण गरेको देखेको, कुर यातना दिएको देखेको, अपहरण गरेको गोली हानाहान भएको देखेको वा घरहरू जिलरहेको देखेको आदि घटना विद्यार्थीलाई सोध्न सिकन्छ ।)	रेको आफ्नै आंखाले देखेको, देखेको, वम खसालेको देखेको, हरू घटेको छ कि छैन भनेर
CPSS-B त्यो घटना कहिले भएको थियो ? अब म तपाईले भखेरै भनेको दु:खद घटना वा अन्य कुनै घटनाहरू गएको कत्तिको सम्भना आए वा त्यस्ता घटनाले तपाईलाई कत्तिको दु:ख दिए होल सोध्न गइरहेको छु । म तपाईलाई प्रश्नहरू र त्यसका सम्भावित उत्तरहरू आफूलाई मिल्ने उत्तर छान्नु पर्ने छ ।	दुई हप्तामा तपाईको मनमा
CPSS 1, तपाईले नचाहँदा नचाहँदै पनि पहिले घटेका घटनाहरूको दुःख दि (सम्भ्रता) कत्तिको आए होला ? कहिल्यै पनि आएन कहिलेकाहि आए (हप्तामा एक पटक) धेरैजसो आए (हप्तामा २ देखि ४ पटक) संधैजसो आए (हप्तामा ५ पटक वा सो भन्दा धेरै)	o
CPSS 2. तपाईले कित पटक नरामा वा डरलाग्दा सपनाहरू देख्नु म कहिल्यै प्रनि देखिन कहिलेकाहि देखें (हप्तामा एक पटक) धेरैजसो देखें (हप्तामा २ देखि ४ पटक) संधैजसो देखें (हप्तामा ५ पटक वा सो भन्दा धेरै)	यो होला ? ०
CPSS 3. तपाइँलाई आफू फेरि त्यही घटनामा परेजस्तो, केही सुने जस्तो भएको थियो ? कहिल्यै पनि भएन कहिलेकाहि भयो (हप्तामा एक पटक) धेरैजसो भयो (हप्तामा २ देखि ४ पटक) संधैजसो भयो (हप्तामा २ पटक वा सो भन्दा धेरै।	र केही देखे जस्तो कत्तिको
	eri alikusasi.

CPSS 4. तपाईलाई पहिले घटेका घटनाको वारेमा सोच्दा वा सुन्दा, दु:ख लाग्ने	ने, तर्सिने र रिस उठने
कत्तिको भयो होला ?	
41044 111 1141	
कहिलेकाहि भयो (हप्तामा एक पटक)	
धेरैजसो भयो (हप्तामा २ देखि ४ पटक)	
संधैजसो भयो ।हप्तामा ४ पटक वासो भन्दा धेरै।	
CPSS 5. तपाईलाई पहिलेका घटनाको बारेमा सोच्दा वा सुन्दा तपाईको । पऱ्यो शउदाहरणको लागि मुटु ढुकढुक हुने, सास फेर्न गाहो हुने, शरीरमा खल काप्ने)	खल परिना आउने व
कहिल्यै पनि परेन	
कहिलेकाहिं पऱ्यो (हप्तामा एक पटक)	
धेरैजसो पऱ्यो (हप्तामा २ देखि ४ पटक)	
संधैजसो पऱ्यो (हप्तामा ४ पटक वा सो भन्दा धेरै)	
CPSS 6. तपाईले पहिले घटेनका घटनाहरूबारे नसीच्ने वा कुरा नगर्न कतिव कहिल्यै पनि कोशिस गरिन	हो कोशिस गर्नु भयो
कहिल्यै पनि कोशिस गरिन	
कहिलकाहि कोशिस गेरे (हप्तामा एक पटक)	
धेरैजसो कोशिस गरें (हप्तामा २ देखि ४ पटक)	
संधैजसो कोशिस गरें (हप्तामा ५ पंटक वा सो भन्दा धेरै)	
CPSS 7. तपाई पहिले घटना घटेका ठाउँमा नजाने अथवा घटनासँग सम्बन्धिः घटना सम्बन्धिः कियाकलाप नगर्ने कत्तिको कोशिस गर्नु भयो होला ?	
कहिल्यै पनि कोशिसं गरिन कहिलेकाहि कोशिस गरें (हप्तामा एक पटक)	
कहिलेकाहि कोशिस गरें (हप्तामा एक पटक)	
धेरैजसो कोशिस गरें (हप्तामा २ देखि ४ पटक)	
संधैजसो कोशिस गरें (हप्तामा ४ पटक वा सो भन्दा धेरै)	
CPSS 8. तपाइँलाई पहिलेका दुःखदायी घटनाको महत्वपूर्ण कुराहरू सम्भान थियो ?(उदाहरणको लागि तपाईको भाईलाई केही महिना अगांडि कसैले कुटेंब	ा कतिको गाहो भएव में तपाईले देख्नु भएव
थियो । अहिले तपाईलाई उक्त मान्छेको अनुहार सम्भन कत्तिको गाह्रो हुन्छ ॥	
कहिल्यै पनि गाडो भएन	
कहिलेकाहि गाडो भयो (हप्तामा एक पट्क)	
धेरैजसो गाड़ो भयो (हप्तामा २ देखि ४ पटक)	
संधैजसो गाहो भयो (हप्तामा ४ पटक वा सो भन्दा धेरै)	
CPSS 9. तपाईलाई संधै गर्न मन लागेका कामहरू कत्तिको गर्न मन लागेन हो	ला ?
कहिल्यै पनि लागेन	
कहिल्यै पनि लागेन	
धेरैजसो लाग्यो (हप्तामा २ देखि ४ पटक)	
संधैजसो लाग्यो (हप्तामा ५ पटक वा सो भन्दा धेरै)	

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CPSS 10. तपाईको मनमा साथीभाईबाट वा परिवारबाट कत्तिको टाढा भएको जस्तो लाग	ल डोला
कहिल्यै पनि लागेन	
कहिलेकाहि लाग्यो (हप्तामा एक पटक)	
कहितकाहि ताचा (हन्तामा २ वेटि ४ एउट)	m.m
धेरैजसो लाग्यो (हप्तामा २ देखि ४ पटक) संधैजसो लाग्यो (हप्तामा ५ पटक वा सो भन्दा धेरै)	
그는 그리고 있는 그렇게 말할 때 나가도 지하다고 있었다. 전 2012년에 대한 2012년에 대한 그리고 있다.	
CPSS 11. तपाईलाई सुख भएको बेला पिन मन खुसी नहुने, दुःख भएको बेला पिन मन कत्तिको भएको थियो ? (उदाहरणको लागि : मानौ तपाई रमाइलो भइरहेको ठाउँमा हुनु ।	हुन्छ तपाईका
सबै साथीहरू रमाइलो गरिरहेका छन् तर तपाईलाई भने केहि पनि रमाइलो ल	
कहिल्यै पनि भएन	
कहिलेकाहि भयो (हप्तामा एक पटक)	
धेरैजसो भयो (हप्तामा २ देखि ४ पटक)	S
संधैजसो भयो (हप्तामा ५ पटक वा सो भन्दा धेरै) 🖟 🚃	J
CPSS 12. तपाईलाई आफूले चाहेका कुरा भविष्यमा पुरा हुँदैनन् कि जस्तो कृतिको लाग जस्तै: जागिर नेपाउने, पढाई पुरा गर्न नसक्ने)	को धियो ?
कहिल्यै पनि लागेन	0
कहिलेकाहि लाग्यो (हप्तामा एक पटक)	٩٩
धेरैजसो लाग्यो (हप्तामा २ देखि ४ पटक)	२
सँधैजसो लाग्यो (हप्तामा ५ पटक वा सो भन्दा धेरै)	
CPSS 13. तपाईलाई रामरी निन्दा नलाग्ने र राति व्युक्तने कति पटक भ	
कहिलेकाहि भयो (हप्तामा एक पटक)	
धेरैजसो भयो (हप्तामा २ देखि ४ पटक)	
सँधैजसो भयो (हप्तामा ६ पटक वा सो भन्दा धेरै)	
시민 경우 하다 하는 그 아이가 다른 아이들은 그는 시간에 가지 않는 물을 꾸었다면 그렇게 되었다.	
CPSS 14. तपाईलाई सानो कुरामा पनि रिस उठ्ने अनि भाकों लाग्ने कति पटक	नयो होला ?
कहिल्यै पनि भएन	
कहिलेकाहि भयो (हप्तामा एक पटक)	
धेरैजसो भयो (हप्तामा २ देखि ४ पटक)	
संधैजसो भयो (हप्तामा ५ पटक वा सो भन्दा धेरै)	३
CPSS 15. तपाईलाई आफुले गरिरहेको काममा ध्यान दिन नसक्ने कत्तिको भए	को थियो ?
उदाहरणको लागि पढेको करा छिटो बिसेने, सरले पढाइराखेको बेला ध्यान दिन न	सक्ने आदि।
कहिल्यै पनि भएन	
कहिलेकाहि भयो (हप्तामा एक पटक)	9
धेरैजसो भयो (हप्तामा २ देखि ४ पटक)	२
संधैजसो भयो (इप्तामा ५ पटक वा सो भन्दा शेरै)	3

कोड	zi.	
THIS.	-	*************

CPSS 16. तपाइंलाई कितको आफूलाई बढी शका लागे जस्तो अथवा चाहिने भन्दा बढी होशियार भएको जस्तो भएको थियो शजस्तो धेरै पटक ढोका लगाएको छ कि छेन भनेर हेर्न, भोज भतेरमा जाँदा कसैले आफूलाई हेरिरहेको जस्तो लाग्नु कोहि पछि लागे जस्तो लाग्नु आदि।
कित्वे पिन भएन ० कितकेकाहि भयो (हप्तामा एक पटक) १ धेरैजसो भयो (हप्तामा २ देखि ४ पटक) १ संधैजसो भयो (हप्तामा १ पटक वा सो भन्दा धेरै) ३ CPSS 17. तपाईलाई कित पटक सानो कुरामा पिन भारिकने, एक्कासी कुनै आवाज सुन्दा भारत हुने कितको भएको थियो १ कहिल्थै पिन भएन ० कहिलेकाहि भयो (हप्तामा एक पटक) १ धेरैजसो भयो (हप्तामा एक पटक) १ धेरैजसो भयो (हप्तामा २ देखि ४ पटक) १ संधैजसो भयो (हप्तामा २ देखि ४ पटक) १ संधैजसो भयो (हप्तामा १ पटक वा सो भन्दा धेरै)

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	कोड न
Brief Childhood T	rauma questionnaire (CTQ-SF)
CTQ-1. तपाई आफ्नो बाल्यकालमा कहिल्य पनि पाईन	कत्तिको पुशस्त मात्रामा स्नान पाउन भगको भिग्ने ।
अलिअलि पाएँ	•
कहिलेकाहि पाएँ	9
धेरैज़सो पाएँ	3
सँधै पाएँ	¥
CTQ-2. तपाईलाई आफ्नो बाल्यकालम	रा आमावुबा वा अरु कसैले कत्तिको हेरविचार गर्नु भएको
ाथया ?	. : : : [10] - [
कहिल्यै पनि थिएन	·
अलिअलि थियो	9
कहिलेकाहि थियो	
धेरैजसो थियो	
संधै थियो	Ψ
CTQ-3. तपाईंलाई परिवारका अरु मानि	नसले कत्तिको मुर्ख, अल्खि र फोहोरी (कुरूप) भन्ने गर्थे ?
काहल्य पान भननन्	
अलिअलि भने	
कहिलेकाहि भने	
धेरैजसो भने	
संधै भने	¥
CTQ-4 तपाईको वाल्यकालमा तपाईका बु	वाआमा कत्तिको रक्सि अथवा अन्य लागु पदार्थ खाएर (पिएर)
आउनु हुन्थ्यो जस्ले गर्दा उहाँहरूले तपाई हे	रविचार गर्न सक्नु हुन्न थियो ?
कहिल्यै पनि खानुहुन्न थियो	o
अलिअलि खानहुन्थ्यो	۹
कहिलेकाहिं खानुहुन्थ्यो	3
धेरैजसो खानुहुन्थ्यो	······································
संधै खानुहुन्थ्यो	Ψ
CTQ-5 तपाईको बाल्यकालमा परिवारका	सदस्यहरूले महत्वपूर्ण कुराहरूको महशुश गराउन कत्तिको
सहयाग गरका थिए ?	로마를 강경하다면 하다 하다면 하다 말이 많아가셨다니다.
कहिल्यै पनि गरेनन्	o

CTQ-6 तपाईले अफूनो बाल्यकामा मैला	लुगा कत्तिको लगाउनु परेको (भएको) थियो ?
प्रकार प्रोत समाजन परन	And the state of t
अलिअलि लगाउन पर्यो	
कहिलेकाहि लगाउन पर्यो	
4	그 사람들은 얼마나 그 맛있다고 그렇다 나가 살린다. 그렇게 하는 것이 먹어가 살아갔다고 하다.
संधै लगाउनु पर्यो	
CTQ-7 तपाईले आफ्नो बाल्यकालमा	अरूबाट कत्तिको माया पाउनु भएकोथियो ?
कहिल्यै पनि पाईनअतिअति पाएँ	
अलिअलि पाएँ	1
कहिलेकाहि पाएँ	
क्षेत्रै जम्मो पाएँ	
संधै पाएँ	¥
CTO-8 तपाईको ब्वाआमाले तपाई नजन्मिएको	भए हुन्थ्यो भनेर सोचहोलान् भन्ने तपाईलाई कत्तिको
लारह ?	
कहिल्यै पनि लाग्दैन अलिअलि लाग्छ	o
अलिअलि लाग्छ	٩
कहिलेकाहि लाग्छ	3
धरजसा लाग्छ	
संधै लाग्छ	Y
되어야 그렇게 내가 되는 얼마 하지만 하다 하다 되었다.	그렇게 되어 어느 아들아 들었다. 그는 그림, 그림, 그를 이어가 싶어 뒤에 아이지 않는 어머니?
CTQ-9 तपाईलाई आफ्नो बाल्यकालमा परिवार	का कुनै सदस्यले बेस्सरी कुटेका थिए जसले गर्दा तपाई
ज्याची जागि टाक्टरकरों वा अस्पतालमा भनी ह	नपरेको थिया ?
0 9 0 0	0
अनिअनि थियो	1.
कहिलेकाहि थियो	₹
धेरैजसो थियो	
संधै थियो	¥
CTO-10. तपाईलाई आफ्नो बाल्यकालमा त	पाईको परिवारमा सबै चिज राम्रो थियो जस्तो लाग्छ ?
कहिल्यै पनि लागेन	0
अलिअलि लाग्यो	٩.
कहिलेकाहिं लाग्यो	٩
धेरैजसो लाग्यो	
संधै लाग्यो	Y

경기 강의 왕이는 이 왕이를 하고 있다.	कोड नं
CTO-11. तपाईलाई आफनो वाल्यकालमा परिवा	रका सदस्यले कत्तिको निलडाम हुनेगरी कुट्रेका थिए ?
रुहिल्यै पनि कुटेनन्	
अलिअलि क्टे	9
म्हिलेकाहिं कुटे	
ग्रेरैजसो कुटे	
संधै क्टे	Y
3	
CTO-12 तपार्दलार्द आफनो बाल्यकालमा कसै	ले पेटिले, लट्टिठले (काठको टुकाले) वा डोरिले बाँधेर
क्टेका थिए ?	
क्रहिल्यै पनि थिएन	0
अनिअनि थियो	
कृहिलेकाहिं थियों	•
धेरैजसो थियो	3
संधै थियो	
1441	
CTO-13 तपाईको बाल्यकालमा परिवारका सद	स्यहरूले एक अर्काको कत्तिको हेरविचार गर्ने गर्थे ?
कहिल्यै पनि गर्दैनथे	
अलिअलि गर्थे	
कहिलेकाहिं गर्थे	•
धेरैजसो गर्थे	
संधै गर्थे	
4a 14	
CTO 14 वण्डको बाजाकाच्या परिवारका सट	स्यहरूले तपाईलाई कत्तिको अपमान गर्ने (होत्याउने
खालका वा चित्त दख्ने खालका क्रियाकलाप गर्ने ग	
कहिल्यै पनि गर्दैनथे	
अलिअलि गर्थे	그런 그 나는 모양을 하는데 이번 이 가는데 하는데 하는데 되는데 하는데 이 나는데 하나는데 하다.
अलिआल गर्थ कहिलेकाहिं गर्थे	
कोहलकाह गर्थ धेरैजसो गर्थे	
धरजसा गय	

CTQ-15 तपाईले बाल्यकालमा कत्तिको शारीरिक यातना पाउनु भएको थियो ?

धेरैजसो थियो

요그리얼 집안 되다면 그렇게 하나 시간에 의견을 하게 그렇게 하다.	중점 교육에 유럽하는 글이 얼마가다니다.
कोड नं	
CTQ-16 तपाईको बाल्यकाल कत्तिको राम्रोसँग वितेको	थियो ?
कहिल्यै पनि राम्ररी बितेको थिएन	
आलिअलि राम्ररी वितेको थियो	9
कहिलेकाहि राम्ररी वितेको थियो	
धेरैजसो रामरी वितेको थियो	
संधै राम्ररी बितेको थियो	The state of the s
CTQ-17 तपाईको बाल्यकामा तपाईलाई बेस्सरी क्टेक	ो तपाईका छिमेकी, शिक्षक, शिक्षिका र डाक्टरले
कत्तिका देखेका थिए ?	
कहिल्यै पनि देखेका थिएनन	0
अलिअलि देखेका थिए	
कहिलेकाहि देखेका थिए	
धेरैजसो देखेका थिए	
सँधै देखेका थिए	
त्व प्रवचन (पर्	
CTQ-18 तपाईको वाल्यकालमा तपाईलाई परिवारका	सदस्यहरूले कत्तिको घुणा गर्ने गर्थे ?
कहिल्यै पनि गर्दैनथे	
अलिअलि गर्थे	
कहिलेकाहिं गर्थे	
धेरैजसो गर्थे	
संधै गर्थे	
CTQ-19 तपाईको वाल्यकालमा परिवारका सदस्यहरू	
कहिल्यै पनि गर्देनथे	
अलिअलि गर्थे	
कहिलेकाहि गर्थे	२
धेरैजसो गर्चे	
संधै गर्थे	
CTO 20	
CTQ-20 तपाईको बाल्यकालमा कसैले तपाईको यौन अथवा तपाईलाई उनीहरूको यौन अगमा छुन कत्तिको ल	गाएका थिए ?
कहिल्यै पनि थिएन	
अलिअलि थियो	
कहिलेकाहि थियो	
धेरैजसो थियो	
संधै थियो	¥
보다 마시 하다가 나가서 중에 되었다.	나는 경기를 보고 있다면 하는 생각하는

	कोड वं
CTQ-21 तपाईको बाल्यकालमा कसैले तपाईलाई उनीहरूसँग यौन सम	बन्ध नराखे मार्ने धम्कि कतिक
दिएका थिए ?	
कहिल्यै पनि थिएन	
अलिअलि थियो १	
कहिलेकाहि थियो २	
धेरैजसो थियो :	
संधै थियो ४	
CTQ-22 तपाईलाई बाल्यकालमा आफ्नो परिवार कत्तिको राम्रो लाख्यो	1
कहिल्यै पनि राम्रो लाग्दैन थियो	
अलिअलि राम्रो लाग्ध्यो	
कहिलेकाहि राम्रो लाग्ध्यो	
धेरैजसो राम्रो लाग्ध्यो	
सँधै रामो लाग्ध्यो ४	
그림 집에 가는 아이들이 얼마나 되었다.	
CTQ-23 तपाईलाई बाल्यकालमा कसैले यौन सम्पर्क गर्ने वा यौन सम्ब कत्तिको गरेको थिए?	ान्धि बस्तुहरू देखाउने कोशिस
कहिल्यै पनि थिएन०	
अलिअलि थियो 9	
कहिलेकाहि थियो २	
धेरैजसो थियों	그렇게 하고 못했습니?
संधै वियो ४	
CTQ-24 तपाईलाई बाल्यकालमा कसैले यौन शोषणको (सम्पर्कको) । थियो ?	लागि कत्तिको सताउने गरेको
कहिल्यै पनि थिएन	
अतिअति थियो १	
कहिलेकाहि थियो	
धेरैजसो थियो	
सँधै थियो ४	
	1.00
CTQ-25 तपाईको बाल्यकालमा तपाईलाई अरूले कत्तिको भावनात्मक श	विषय गर्ने गरका थिए ? (जस्तै
मन दुख्ने गरी गाली गर्ने, चित्त दुख्ने करा गर्ने, दोष लगाउने आदि ।)	
कहिल्यै पनि थिएन०	
अतिअति थियो १	

그래요 하나를 살려면 있다고 하나 하나요? 그는 얼굴이 하나를 다니다고 했다.	
CTQ-26 तपाईको बाल्यकालमा तपाईलाई आवश्यक परेका बेला डाब्स	टर कहाँ लाने मान्छे कतिका उपलब्ध
थिए ? (कत्तिको डाक्टर कहाँ कत्तिको लाने गरिएको थियो ?)	Sur Shail Alash
कहिल्यै पनि थिएन	0
अलिअलि थियो	٩
कहिलेकाहि थियो	
धेरैजसो थियो	요즘 이 집에 가게 되는 사람이 아니다. 그렇게 그 아니는 그 때문에 가는 그 때문에 가는 그 없다.
संधै थियो	
CTQ-27 तपाईको वाल्यकालमा कतिको यौन शोषण भएको थियो :	
कहिल्यै पनि थिएन	0
अलिअलि थियो	
कहिलेकाहि थियो	
धेरैजसो थियो	
संधै थियो	
CTQ-28 तपाईको आफ्नो वाल्यकालमा परिवारबाट कत्तिको	सहयोग पाउनु भएको थियो ?
कहिल्यै पनि थिएन	. 0
अलिअलि थियो	
कहिलेकाहिं थियो	3
धेरैजसो थियो	
संधै थियो	Y
공항 환경 이 시간에 가장 하지 않는데 되었다.	
CTQ-29 तपाईलाई बाल्यकालमा आफू बस्ने गरेको घर कृतिको रा	
कहिल्यै पनि राम्रौ लागेन	
अलिअलि राम्रों लाग्ध्यो	
कहिलेकाहि राम्रो लाग्थ्यो	
धेरैजसो राम्रो लाग्ध्यो	
संधै राम्रो लाग्ध्यो	
CTQ-30 तपाईको बाल्यकालमा तपाईले अन्य बालबालिका भ	ला कनिको अद्रयारो भोरत परेको
- 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.	at allian additional state
थियो ? कहिल्यै पनि थिएन	
अहिब्स पान थिएन अलिअलि थियो	
कहिलेकाहिं थियो	
काहलकाह ।थया धेरैजसो थियो	3
धरजसा थियो	
48 144F	기다 나를 하는데 말을 하면 했다.

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