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Social Isolation

An Interdisciplinary View

*Edited by Rosalba Morese, Sara Palermo
and Raffaella Fiorella*



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Edited by Rosalba Morese, Sara Palermo and Raffaella Fiorella

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Meet the editors



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Preface

This book deals with an increasingly current phenomenon in various countries around the world. It offers an interdisciplinary point of view with a broad and, at the same time, in-depth vision of the various aspects that can contribute to better understand social isolation. Authors, who represent different disciplines and belong to different countries of the world, offer contributions of high scientific profile with new perspectives in the field of social security thanks to the originality of their ideas, theories, research, scientific results and discussions.

The first chapter presents an interesting contribution of how social isolation can be considered a health risk factor as it can contribute to the development of a mental health disease. This chapter brings together the contributions of clinical psychology, psychoeducational interventions and research on social neurosciences to explain and better understand what happens when social withdrawal develops. In particular, understanding which factors favor social withdrawal can help create new theoretical approaches and innovative clinical and psycho-educational interventions.

The second chapter offers a critical analysis of the social isolation experienced by young people who adopt an airtight lifestyle characterized by isolation from the rest of the world for an extended period of time. The authors refer to four parameters, namely time, place, social relations and social status to help professionals distinguish those who are in a state of social withdrawal. The authors carry out a review of the literature with empirical data on young people living in Hong Kong. The authors suggest that it is important to offer a favorable environment to challenge social isolation with the support of interdisciplinary research and practice.

The third chapter deals with social isolation for people over the age of 65 in a geographically isolated context such as the island of Maldives. This chapter highlights the importance of family and friends, rather than the community, in fostering social connections. It shows specific factors of smaller contexts such as islands rather than industrialized ones.

The fourth chapter presents innovative methods for dealing with domestic violence, particularly with male students. In particular, the chapter suggests recommendations for greater involvement of male university students in this type of social justice campaign.

The fifth chapter presents, from a sociological point of view, society and social isolation due to the digital dimension. The isolation created by digital connections is very impactful as ever. This aspect is very important to better understand the current social and cultural aspects.

The sixth chapter addresses another type of social deprivation that manifests itself in the deficit in the social domain of autism spectrum disorder (ASD). To understand how social deprivation can affect behavior, the researchers present an

innovative study on rodent isolation during early adolescence. Rodent isolation has shown harmful effects on social development and this is useful for understanding the mechanisms of neurological development that can be modified by social interactions.

This book offers an excellent expression of interdisciplinary perspectives that express innovative theoretical ideas, empirical evidence, discussions and suggestions. Therefore, this book represents an extraordinary opportunity to better understand the complex phenomena of social isolation.

“I go out. You want to come? The insulation would be too heavy; desperate and crazy on the deserted streets. To demand a destiny.”

(Sylvia Plath)

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Section 1

Social Withdrawal

Social Withdrawal and Mental Health: An Interdisciplinary Approach

*Rosalba Morese, Sara Palermo, Carlotta Torello
and Francesca Sechi*

Abstract

Social isolation may be considered as a risk factor for health. It may contribute to the development of a mental health disease. In this chapter, social withdrawal is defined as voluntary isolation prolonged in time that involves the cessation of any form of social relationship and contact with people and the outside. Clinical psychology, psycho-educational interventions, and social neuroscience research tries to understand what happens when social isolation is experienced. Therefore an interdisciplinary perspective can help to better understand this phenomenon. The deepening of these aspects can help to create new forms of theoretical perspective and of a clinical and psycho-educational intervention to better arrange for this new type of maladaptive condition.

Keywords: social withdrawal, adolescents, health, psycho-educative intervention, social neuroscience, mental health

1. Introduction

Social relationships represent a very important dimension during adolescence [1]; for this reason social withdrawal is an actual phenomenon that needs to be examined in detail. As very little is known about it, the risk that may contribute to the formation of a mental health disease may be ignored. Additionally, it is critical to remember that social withdrawal may also occur as a complication of an existing mental health disorder. Social withdrawal is defined as the lack of social relations with one's family and friends. This situation may create very important damages in interpersonal relations and social relations at an individual level and that may affect the society in general. Barzeva et al. [2] in line with Rubin et al. [3] report that it is "an umbrella term referring to an individual's voluntary self-isolation from familiar and/or unfamiliar others through the consistent display of solitary behaviors such as shyness, spending excessive time alone, and avoiding peer interaction."

The intensive use of the Internet or video games is also associated with social withdrawal. This may be indicative of a form of adaptation of social isolation, but it becomes a real addiction. The use of interactive media for games is very frequent among adolescents, and is increasingly on the rise [4, 5]. It is estimated that the number of teenagers using smartphones have rapidly increased in recent years, the percentage has gone from 73 to 95% in the last 4 years. In particular, the use is

associated with video games and the use of social media such as YouTube (85%), Instagram (72%), and Snapchat (69%) [4, 5].

The frequency of Internet addiction that has been estimated in various countries is very different in Western and Asian cultures with respect to social norms and the culture of using social media [6, 7], varying from 0.8% in Italy to 14% in China and from 12% and up to 26.7% in Hong Kong.

2. Social withdrawal

In recent years, a new social phenomenon has been observed. Many adolescents voluntarily isolate themselves by withdrawing, and become recluses in their families, and in their social environment. Until 2008, this manifestation was considered as a symptom of other psychopathological situations in DSM-IV * (Statistical diagnostic manual of mental disorders) [8, 9] such as psychosis. Although this state of social withdrawal leads to such a serious consequence in adults, the adolescents who show a social withdrawal do not meet the criteria for a diagnosis.

The phenomenon of well-known social withdrawal in Japan is called Hikikomori, a term coined by a psychiatrist, Saito. Saito [10, 11] described Hikikomori as withdrawing from contact with family, having almost no friends, and not attending school for adolescents. Beginning from late 1970s, Hikikomori has been a silent epidemic among teens and young adults in Japan. Currently, Japanese scholars differentiate the phenomenon of Hikikomori from social withdrawal as being as a consequence of a psychiatric psychopathology that occurs together with the diagnosis of depression, personality disorder, anxiety disorder etc. Social withdrawal and the difficulty in creating social relationships do not manifest themselves as a primary symptom but do not meet the criteria of diagnostic labels so far theorized by international psychiatry [12]. To overcome this diagnostic gap, the Japanese Ministry of Health created guidelines in 2003 to help identify the Hikikomori phenomenon, by establishing the presence of certain criteria:

- home-confined lifestyle;
- lack of motivation to attend school or work;
- absence of criteria for the other psychiatric diagnoses such as agoraphobia, schizophrenia, etc.
- duration of symptoms more than 6 months.

The phenomenon of social withdrawal in Italy has been handled from a different perspective than that of the Japanese Hikikomori. Initially, the attention to adolescent withdrawal was addressed as a consequence of the even more extensive phenomenon of Internet addiction. For example, in Italian literature [13], Internet users differ in their action: (a) those who use the Web to achieve economic, relational, or social success and are the socially overexposed and (b) Internet addicts who use the Web to escape from anxieties and depressive experiences. The latter are social retreats.

3. Social withdrawal: the symptom of a block in the growth process

Berne [14] defines the script as: "A life plan bases on a decision taken during childhood, reinforced by parents, justified by subsequent events, and culminating

in a final choice.” During childhood, each child creates a script of life that becomes the supporting structure of the identity with which the person gives form and meaning to himself and to the world [14]. In his life script, the child will insert the expectations, injunctions, and thrusts that come from the most important attachment figures. The injunctions are the limits that the person perceives in childhood from the attitudes of the parental figures who exercise restrictions in being able to freely express themselves. The pushes, also called orders, are prescriptive commands, insistent, that the parental figures send verbally to their children. Current families are often composed of a single child; it may happen that parents pour out numerous projections and expectations in the line of “being perfect” and they push the child to try desperately. Thus the child is required to be precise in everything he does; in school and in relationships, inaccuracies are not tolerated. These inducing attitudes may be accompanied by injunctive messages sent by parents during childhood. The cognitive structures of parents, often formed before the birth of the baby, are too full of fantasies and expectations that they unwittingly create a deep predisposition to make things go wrong. These parental messages may generate feelings of shame. Shame is an emotion of a relational nature in which the person oscillates between the desire to be admired by the other and the fear of failing, between the desire to be accepted and the feeling of being excluded [15]. Sometimes shame may become a process of protection to avoid feeling the emotions of humiliation and vulnerability linked to the loss of the relationship with the other. Shame may lead to a denial of anger to allow the child/adolescent to keep the relationship with the person who carried out the humiliating transactions. When anger is denied, an important need of the person is lost, that of being taken seriously, with respect, and being important to others. Self-esteem may remain extremely compromised. The emotions of sadness and fear are also hidden in the feeling of shame. Some examples may be the sadness of not being accepted, with one’s needs, desires and behaviors and the fear of being abandoned, of losing the relationship with the other because of what one is [16]. During puberty, the antiscript is experienced [14]; the exact opposite of the Life script that the child together with the parents and the environment was built during the first years. Experiencing the opposite is a healthy strategy to try and find the right balance between extremes. But it may happen that the boy in this attempt to experience his tolerance or his possibilities of decision arrives at extreme behaviors, such as solitude and isolation [17]. From the existential crisis, the boy can find new ideas about his identity or he may get stuck in the copycat decisions made in childhood. In scripts where parental injunctions have unwittingly created a strong feeling of shame, it may happen that the child considers his body and his abilities to face the world to be unsuitable. All the expectations that parents and the child had built in childhood collapse. This transactional analytical perspective agrees with other psychological theories in which therapeutic work with the child is considered necessary to help him in the long work of building an identity capable of tolerating confrontation with others.

4. Social withdrawal in Italy

In recent years, a new social phenomenon has been observed in Italy. Unlike the first Japanese Hikikomori who adopted a lifestyle of social exclusion long before the arrival of the Internet, in Italy, social withdrawal has been studied as a consequence of Internet addiction because this condition is often accompanied by the use and abuse of the network. This is the obvious symptom that alarms parents and forces them to ask for help. Therefore, the abuse of the network was studied as a cause of social withdrawal initially. Currently, scholars claim that the abuse of the Internet

is linked to social withdrawal as a strategy to survive an extreme lifestyle. The use of the Internet as well as allowing access to information allows the symbolization of the world through the construction of avatars and role-playing games and allows a protected relationship with others, in which it is not necessary to use the body, for example in online games [18].

Living virtually allows being in relationships with others maintaining the considered right distance by secluded teenager, which allows them to keep away the feeling of anxiety and the sense of inadequacy that comes from inter-relational confrontation [19]. Two important components need to be considered: the age of onset of seclusion and gender. The debut usually takes place in two timelines that coincide with two important changes in the life of the students: the first is the passage in the secondary school between the first degree (middle school) and the second degree (high school); the second delicate passage occurs at the end of high school with a leap into the university world. Depending on the time of onset, the setting and the therapeutic work change. Dealing with the gender components, social withdrawal appears predominantly as a male symptomatology. It seems that the two disorders are complementary, even though in recent years the cases of male anorexia and female social withdrawal are increasingly widespread [19].

5. Reactivate the growth process: interdisciplinary intervention

Taking charge of the withdrawn social adolescent requires special attention given the complexity of the phenomenon. Currently, there are no guidelines shared by the different theoretical approaches, as is the case for other clinical pictures such as attempted suicide and anorexia. The point on which the different approaches converge is that the treatment of social withdrawal consists in a global management of the adolescent's life context and that it is necessary to work on the relational emptiness that the boy has created around him. If on the one hand, the secluded teenager tends to eliminate and abandon relationships and spaces of movement, the parents try to create, expand, and add both physical and mental space, respecting the boy's timing and propensity to change [20].

In Italy, there are public and private services such as associations, cooperatives, foundations, and various types of organizations that deal with socially isolated adolescents. The interventions for social withdrawal cases in Italy vary. Despite the diversity of approach, generally an open intervention is addressed both to the boy and the context. The family is invited, then the detailed anamnesis is taken including not only the parents but also other significant persons in the family environment. The sessions are carried out by psychotherapists, in some cases the collaboration with a neuropsychiatrist to foresee and to exclude possible psychopathologies or to place side by side, if necessary, a pharmacological cure. Professional educators within the multi-professional team are those who perform home interventions in the most extreme situations in which significant social isolation makes an intervention outside the family setting impossible.

6. An Italian example of clinical intervention

Different kinds of interventions vary depending on the theoretical approach and the different tools available including public and private practices in Italy. One of the consolidated interventions is implemented in a private clinic in Milan, at the Minotauro Institute. The ultimate goal is to reactivate the evolutionary path where the adolescent resides. The first step is the alliance with the boy and his lifestyle,

a symptom of anguish and unacceptable pain. The assumption of the Minotauro team is that the unconscious drive to live pushes these teenagers to find alternative, albeit virtual, ways to madness or death. In fact, in the most serious cases, withdrawal is the only way to manage the fragility, saving one's own body. The escape of one's body is the decision taken by the secluded boy to remain alive, both psychologically and physically. For this reason, the alliance with the symptom is fundamental for the Minotauro method. Only in this way is a therapeutic path possible in which the boy rediscovers the real self with the resources and the evolutionary capacities that allow him to imagine and therefore invest in a future perspective. The therapist explores the adolescent's signals and communications, helps him to transform anguish and pain into words, to promote the transformation of family dynamics and to create alternatives for eliminating the voluntary withdrawal [19].

The experience of the Minotaur indicates as a first step the taking in charge of the parents who usually turn to the center without being accompanied by the boy. Parental care provides with extreme attention the figure of the father who plays a fundamental role in the context of social withdrawal. The intervention method foresees that parents follow individual psychotherapy.

7. Social withdrawal and social brain

During puberty, the neurophysiological development of the prefrontal cortex occurs very quickly [1]. The prefrontal cortex deals with not only cognitive abilities such as planning and executive functions [21], but also the regulation and management of emotions. In particular, it deals with regulating behavior with respect to the emotions evoked by group dynamics such as the sense of belonging to one's own group [22, 23]. In other words prefrontal cortex corresponds to a social brain. Spear [24] stresses that during this period there is a qualitative change in social relations with an increase in contacts with peers, in particular, in salience of social rewards. From the hormonal point of view, the adolescent's brain responds differently to that of adults. According to the Walker et al. [25], an adolescent's stress may interfere with the regulatory development of the brain system that includes the area associated with social rewards. In fact, a dysregulation of these involves an alteration of the functioning activated by addictive behaviors like that of electronic devices—Internet. The same structures are involved in substance abuse cases. Even if it has not been included in the DSM-5, "Internet addiction (IA)" is a global issue [26], a behavioral dependence derived from the human-machine interaction with serious consequences such as loss of control and feelings of anger. Internet addiction may favor a clinically severe condition.

8. Conclusion

The aim of this chapter is to give some information on interdisciplinary interventions such as clinical psychology, educational approach, and social neuroscience practices in order to contribute a better understanding of the social withdrawal concept. This can help to better understand the potential risk for mental and physical health. In accordance with the information given in this chapter, working with secluded adolescents has revealed that their families should be included in the therapeutic relationship. It has been also detected that the characteristics found in the secluded adolescents can be traced back to relationships within the family. For example, there is often an intense mother/child relationship that promotes dependence and obstacle in the natural processes of separation and individuation,

a distant or absent paternal figure who initially idealizes and places numerous expectations in the child and when that happens, when these expectations are not satisfied, it becomes debasing. Following the evolutionary theory, it is possible to observe a block in the growth process and in the realization of the evolutionary tasks accompanied by a narcissistic fragility in the boy, lacking not only the evolutionary task of separation-individuation necessary for the construction of identity but also a process in mentalization of the body and a block in the social birth outside the family nucleus [19]. In addition to the family aspect, environmental and cultural factors that may affect and support vulnerable adolescents on such important aspects should also be addressed. Considering interdisciplinary aspects may preserve the social exclusion processes [27]. In this regard, an interdisciplinary point of view can lay the foundations for opening new theoretical and intervention perspectives on the phenomenon.

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Social Isolation Experienced by Youth in Social Withdrawal: Toward an Interdisciplinary Analysis and Practice

Victor Wong, John Yuen, Xuebing Su and Jolene Yung

Abstract

This chapter offers a critical analysis of social isolation experienced by youth in social withdrawal, who lead a hermetic way of life characterized by self-isolation or seclusion by retreating themselves at home from the rest of the world for a protracted period of time. The alienating experience of social withdrawal is defined with reference to four parameters, namely, time, place, social relations, and social status. By using these parameters, helping professionals can distinguish those who are in the state of social withdrawal at home from those who are not and map out the directions and context that NGOs and helping professionals have to thoroughly address if social isolation is to be overcome and reengagement of secluded youth is to be achieved. By conducting thorough literature review and using relevant empirical data drawn from the first author's studies and a longitudinal cohort study of secluded youth in Hong Kong, the authors argue that it is important to start where they are and deliver both home-based and community-based interventions so as to give them an enabling environment where they can cultivate a sense of agency and a sense of expectancy for making a breakthrough against social isolation with the support of interdisciplinary research and practice.

Keywords: social isolation, social withdrawal, home-based intervention, community-based intervention, youth, enabling environment, expectancy

1. Introduction

Social isolation experienced by young people refers to a state in which social interactions with others are limited or even absent for a long period of time. This can take place as a result of involuntary circumstances such as school bullying, peer exclusion, hospitalization, institutionalization, or absence/incarceration of family members or alternatively by voluntary social withdrawal from interacting with others to avoid bullying, frustration, social anxiety, or stress [1, 2]. In the discipline of developmental psychology, involuntary social withdrawal is considered equivalent to social isolation or school disaffection suffered by children and adolescents particularly in educational settings, who are characterized by apparent shyness, asocialness, unsociability, aloneness, and peer avoidance [3]. Social isolation resulted from peer exclusion may not necessarily lead to a sense of loneliness particularly when

young people feel that some intimate others and adult mentors are still around to listen and help. However, when the quantity of interpersonal network is limited and the quality of social support is inadequate, socially withdrawn children and adolescents are more at risk of failing to develop appropriate social and interpersonal skills for engaging in positive interaction with peers in school or community settings. When objective social isolation is further perpetuated as a consequence of involuntary peer exclusion or voluntary social withdrawal as the last resort to react against unfavorable circumstances beyond one's control, loneliness understood as a subjective experience or as "perceived social isolation" would take place [4, 5].

Unlike those student counterparts experiencing a state of social isolation and a sense of loneliness who are usually the targets of study in developmental psychology/psychopathology, this chapter focuses on discussing social isolation experienced by young people in social withdrawal as atomistic individuals, who seclude at home and lead a hermetic way of life without making face-to-face social contacts or having social relationships and interactions with the world other than their family members for a protracted period of time [5, 6]. Young people experiencing social isolation in the form of social withdrawal are characterized by their socially avoidant behavior and their invisibility from the care of helping professionals and the scrutiny of the public [7, 8], who are labeled as "hikikomori" (i.e., young hermits) in Japan [9] and as "hidden youth" in Hong Kong [10]. Young people who seclude themselves at home are asocial in behavioral and relational terms and thus silently trapped in the state of asocialness without enjoying much emotional and instrumental support. However, in the case of young people who are having a psychiatric problem, physical illness, or disability, which has prevented them from participating in the community, they would not be considered as "pure" or "primary" social withdrawal cases. They are instead regarded as secondary social withdrawal cases as a consequence of primary psychiatric or physical problems [11]. In other words, social withdrawal is not primarily a mental health or disability problem, but an anomic behavioral response to difficulties encountered by young people [12]. However, it is entirely possible for primary social withdrawal cases to develop symptoms of depression or social anxiety if they are left alone and feel alone at home for an incredibly long period of time without receiving any professional service.

This chapter first defines social withdrawal experienced by youth with reference to four parameters so as to highlight the nature of social isolation confronted by these young people who are turned invisible, voiceless, and disengaged. Informed by the principle of "starting where the client is," we then discuss different forms of in-home and community-based social work intervention targeted to self-secluded young people who are socially isolated from others other than their family. By using the empirical data drawn from a longitudinal study of youth with social withdrawal experience at home, the next session addresses the importance of interdisciplinary research and practice which is deemed important to facilitate young people to regain a sense of agency and a sense of expectancy for overcoming social isolation and its alienating relational and health outcomes. Before drawing a conclusion, we highlight the importance of advocacy work and its relationship with interdisciplinary research and practice.

2. Parameters for defining the state of social withdrawal

The first two are the interlocking parameters of time and place; the third one is the lack of face-to-face contacts and interactions other than family members; and the final one is the deprivation of a legitimate social status [4].

2.1 First two parameters: time and place

According to the Japanese government, social withdrawal or *hikikomori* in Japanese is a state where people seclude themselves at home for 6 months or more [13]. The length of time is important for temporary seclusion and solitude at home; if it is planned and preferred, it can be productive in nature, which may enhance one's knowledge of one's self and identity and the social environment, and provide relief from the pressures involved in interacting with other people in daily life and regain an orientation for leading a healthy and purposeful life ahead. Nowadays with the use of advanced computer and communication technology, working at home has become commonplace. Nobody will assume that the practice of home office is a manifestation of social withdrawal or social isolation. However, spending more than 6 months at home without working on designated tasks or having a clear purpose will likely cause anxious and lonely feelings [5]. The home or even a small room is largely the space where young people in social withdrawal spend their time and life. However, they may step out of the home boundary for a stroll alone on a silent street at midnight to avoid meeting or greeting neighbors or go out on their own to buy stuff at a corner store at a time when few people or customers are anticipated [8]. Self-seclusion at home was in the first place taken by young people as a viable solution, if not the last resort, to escape from experiencing frustrations such as school bullying, job-seeking failures, parental marital discord, and so on and do the things they prefer doing on their own. To avoid conflicts with the family and the parents in particular, it is not unusual for youth secluded at home to sleep throughout the day and stay awake at night to play online games or watch television alone [5, 7, 8]. However, the longer the period they seclude themselves at home, the more likely they will feel locked in time and space as if time was running slow [5]. Simply imagining that stepping out of their homebound cocoon into a community or public place will lead to a heightening sense of anxiety and insecurity will become an insurmountable barrier to reducing the further perpetuation of social isolation experienced in both an objective and subjective manner.

2.2 Third parameter: lack of face-to-face contacts and interactions

Most of the youth respondents were happy with their secluded lives in the first few months as they could take a break without being interfered, play online games, surf the Internet, and do many other things they were fond of doing. Nevertheless, dispensing with social relationships with others for a long time has deskilled young people in the sense that it leads them to forget how to engage in normal interactions and relationships with others and, accordingly, heightens their anxiety to venture into the community [5, 8]. As shown in research studies in Japan, *hikikomori* dare not go out the home on their own for fear of having eye contacts with distant others or to respond to normal social greetings with neighbors or friends [14]. To avoid conflicts with the family and the parents in particular, it is not unusual for youth secluded at home to sleep throughout the day and stay awake at night to play online games or watch television alone [5, 7, 8]. Mallett argued that home is a "socio-spatial system," where social relations are shaped and reproduced [15]. In the case of extended social withdrawal, the confined space of home causes the inter-generational relationship to spiral further downward. In case of worsened relationship with parents and family members, young people suffering from extended social withdrawal at home may just retreat to their own tiny room with a modest level of interaction with their family. Worse comes to worse, they may even decline eating with the family and take a few biscuits or a cup of instant noodle in their own tiny safe cocoon on a daily basis [6], which is, however, harmful to their health in terms of poor diet and lack of physical exercises [16, 17].

An extended absence of a variety of face-to-face contacts and interactions at home and beyond the home boundary is likely to lead to the deskilling of young people in relation to intimate others such as parents, siblings, and friends and outsiders such as neighbors and strangers. The longer the period of social withdrawal, the higher the likelihood young people will find it difficult to read facial expressions, respond to causal greetings, and engage in causal chats, which in turn results in a downward spiral or vicious cycle of social isolation. Being confined at home without interacting with people face to face does not preclude the possibility of young people's interaction with previous close friends and "virtual others" on the Internet platform. They may have online chatting with peers and ex-classmates on an occasional basis particularly in the beginning phase of self-isolation. But they would likely stop doing so when their ex-peers' pacing and environment of life have become so different from theirs. Self-secluded individuals at home may chat with online players even though without knowing them personally. Virtual online interaction may be interpreted as a manifestation of their desire to make contact with the outside world. This kind of "virtual chatting," however, is not conducive to developing trustful relationship particularly in view of the lack of offline interaction and companionship [5].

2.3 Fourth parameter: deprivation of a legitimate social status

Unlike their student counterparts suffering from social isolation in school settings, young people in social withdrawal at home do not lead a life with a social status as a student, worker, or trainee. They are instead labeled as NEET youth who are socially excluded from the institution of education, employment, or training. After staying for a long while without resuming study at school, going out to find a job in the labor market, or learning something useful in nearby community center, conflicts with their parents and siblings will take place. The conflict taking place on the same generation and across generations in the family context is usually focused on achieving a legitimate youth status as a student, worker, or trainee just like their normal youth counterparts. However, the concern of the family is different from that of the focal person who is too anxious and frightened to map out their transition to a socially legitimate social status. The following verbatim quotes from the first author's field data are representative of clients' reactions against practitioners or outsiders' intrusions into their safe "cocoon" [6]:

As for the school worker, since he works in the school, he must speak for the school. So I did not want to talk to him. And the other one [...] I did not know where he came from [...] he did not look like a social worker. He looked like a construction worker [...] I was very scared and ran into my room. At last, he talked to my mom instead of talking to me, saying something that I did not want to hear at all. I just hope that he will never come to disturb me again. (Sam, a client with social withdrawal experience)

I did not know where they had come from. I just thought they must be the allies of my parents. I can still remember that woman just asked me to stop surfing the internet and listen to her bullshit [...] Another woman just told me "[I] would make my mom unhappy and disappointed if [I] kept on staying at home" [...] She did not attempt to listen to me or understand my worries. (Peter, a client with social withdrawal experience)

What is obvious is that making a transition from the state of NEET to that of engagement in education, employment, or training will be a long rugged journey

characterized by ups and downs. Unlike their NEET counterparts with antisocial behavior, self-secluded and socially isolated home hermits are characterized by their asocial, non-prosocial, and socially avoidant behavior. NEET is just an umbrella term which covers a wide spectrum of youth behaviors, ranging from antisocial to asocial. Many of these NEET youth just look like normal youth with sociable and prosocial behavior with the only exception of whether making a successful transition to work or study.

However, without enjoying a socially legitimate social status as a student, worker, or trainee, it does not mean that these self-secluded and finally socially isolated youth at home are not engaged in activities at all. Many of them were surfing information related to heritage and ecology preservation, leading an eco-friendly life at home, helping out household chores to reduce the care burden of their mother, and developing interest on their own by ongoing googling and/or practice at home, e.g., photo-taking, pet care, handicraft, production of eco-friendly stuff for domestic use, etc. [5–8]. The next session discusses in what way these home-based activities undertaken by secluded youth are taken as interaction points for rapport building and intervention in a space the latter feel secure.

3. Intervention for engagement and facilitating youth transition to the community

The perpetuation of social isolation is not only personal but also structural. If social isolation of youth with chronic social withdrawal experience is to be overcome, social inclusion with concerted efforts made on personal, interpersonal, and structural levels have to be made. Viewed from a social exclusion perspective, the purpose of antisocial exclusion policy and measures paving for the way for social inclusion is to address two interrelated dimensions: exclusion from work and exclusion from social relations [18]. To take a step further, Walker and Walker further argue that social exclusion should be understood “as a dynamic process of being shut out, fully or partially, from any of the social, economic, political or cultural systems which determine the social integration of a person in society” [19]. That is, the structural causes of various forms of social exclusion or disengagement experienced by disadvantaged youth have to be thoroughly addressed even though each of their unique strengths, interests, experiences, and dreams, which are embedded into their transition stories, has to be taken into account.

3.1 Home-based rapport building and interventions: start where the client is

Following aforementioned discussion, professional interventions designed for facilitating youth transition to the world of study, work, or training for those who have been trapped in alienating circumstances of self-seclusion and social isolation in a tiny home space for so long should not be taken as the goal of intervention in the beginning phase. Instead, what matters most in the initial stage of intervention is to build up rapport or initial trust with involuntary, vulnerable, secluded clients who are resistant to visitors and strangers. In the case of outreaching young hermits, the social work motto “to start where the client is” can be read in a literal sense of taking home as a secure place for initial interaction and intervention. Home-based intervention is more than home visitations, and it involves activities with a modest level of conversations or dialogue [20]. Before doing any home visiting, it is considered strategic to listen to the concern of the family and the client’s mother in particular who was usually the one to seek for help from social workers. At the meantime, helping professionals such as social workers, counselors, or youth

workers have to seek relevant information about the client, e.g., personal particulars, length of self-seclusion at home, daily routines or activities, personal interest, relationship with family members, etc.

According to the practice wisdom of experienced social workers, it took on average nine contacts for building up an initial working relationship with each youth client, including but not restricted to home visiting, celebrating client's birthday or doing festival celebration at home, presenting a small gift with the name of the client on it, telephone chatting, leaving behind a handwritten note for Internet or mobile phone contact, texting by using text messaging apps, etc. [5–8]. In the first few home visitations, social workers usually go in pair, as the primary social worker was to initiate interaction with or minimal conversations with the client on something he or she felt interested about, and the other worker was to talk with other family members outside the home environment particularly when they were moralizing the issue or blaming their child. The underlying principle is to start where the client is, which is understood in two interlocking senses: the first of which is to talk about something different from the family's primary concern or about the previous traumatic experience of the client; and the second is to be sensitive to the home environment in terms of both statics and dynamics of which the former refers to family photos, pictures, toys, books, magazines, gifts, souvenirs, etc., whereas the latter refers to family conversations and interactions, activities, or interests that the client was engaged in such as cooking, making desserts, taking care of a pet or two, cleaning goldfish tanks, taking photos of the street, playing online game, etc. Acknowledging the skills and knowledge involved in undertaking all these interest activities or daily routines can open up a space for engaging secluded youth in social interaction and minimal conversations that they have not experienced for so long.

In a home setting, the artifacts available for providing clues to possible talking points include family ornaments, souvenirs, furniture, and so on. In case of difficulties to engage in direct conversation with clients because of their resistance to visitors, it was through talking about artifacts or pictures in the living room that the parents, usually the mothers, were able to elicit happy memories with their beloved children in relation to their unique strengths and abilities. As most of the cases of the first authors' studies were of working class background, their living space was tiny, and the partitioned walls in the clients' homes were not a barrier to their overhearing conversations taking place in the living room. The explicit absence of clients, hidden away from any interaction with social workers as strangers, did not rule out their implicit presence in hearing what is said positive about them. This could help youth clients recall the previous harmonious relationship with their family. These conversations provide a contrast with more recent and current stories filled with frustration, conflict, and anger. This indirect intervention approach can at least help build up an initial working relationship with clients' family and may arouse clients' curiosity about the friendly attitude of helping professionals.

Starting where the clients are does not mean ending up where they are. After gaining initial trust with the worker, the client could be invited to initiate some ideas that they would like to pursue at home, for example, learn to develop one's interest at home in the presence of the worker perhaps with the company and instruction from a youth mentor or try out some new interest that they could not afford to do or dare to dream of doing so, e.g., learn to play magic, keyboard, drum, or guitar, use recycled materials for handicraft making, or even do home-based volunteering or simple paid job by designing a poster for promoting an agency's program targeted to others in need [5]. In this sense, secluded youth at home could develop a sense of agency and a sense of contribution which are all good for rebuilding their self-esteem.

Another innovative means to build initial rapport at clients' homes is to work with animal-assisted therapists or practitioners to use a therapy dog for doing home visitations and interactions. In accordance to the verbatim drawn from a study of the first author, a social worker working with youth in social withdrawal made a related remark as follows:

The dog is called "Fat Fat," which is a tiny dog. Fat Fat is very nice and friendly... Tiny dogs are more acceptable for home visitations, as security guards usually turned a blind eye to this. It's harder if we use therapy dogs of a bigger size... Fat Fat was shortsighted, and he was used to smell and greet others at close distance. Whenever he smelt the presence of young people at proximity, the latter would feel less on guard.... (Adrian, a social worker).

Affective relations with pet or therapeutic animals go beyond the conventional understanding of human relations [21]. The interaction process with the therapy dog Fat Fat opened up the space for dialogues between clients and social workers. The clients were less defensive to relate to social workers as visitors, since the focus of conversation was around the therapy dog rather than taking clients as the focus of concern. The use of therapeutic dogs is not only effective for icebreaking and building trust and rapport with social workers but also affective by giving youth clients a sense of warmth and a sense of touch that they had not experienced with their family members and any others outside the home for so long.

3.2 Community-based interventions: interest-based and client-centered interventions

As to youth with extended self-seclusion experience, anywhere beyond the home environment is a groan zone where they find it risky and uncomfortable. The longer these isolated young people stay at home without making any face-to-face contacts and interactions with others in the community, the more difficult they will find it to make a move outside their comfort zone. One of the effective ways to give these young people an incentive to destabilize their sense of "homebound-ness" is for their entrusted social worker to accompany them to do an unfinished task or two they aspired to settle. The needs and tasks may be as simple as fixing a computer, enjoying a trip to the countryside, having a haircut, buying something in nearby commercial arcade, seeing some heritage buildings, taking photos of beautiful flowers, etc. Acknowledging clients' intention to do or settle something beyond their home environment, though seemingly minute to the rest of the world, can serve as a starting point for making a breakthrough against home confinement, spatially and mentally. Social workers can make use of this opportunity to facilitate homebound youth to plan ahead, make decision, and do mental rehearsal for the tasks they would like to pursue with the company and support from social workers. The experience of venturing into the community can provide secluded youth a solid base for driving out their fear and anxiety for meeting strangers outside their home environment and reflecting on the experience for drawing learnings that could be applied for the next outing.

NGOs with a drop-in corner or activity rooms can provide homebound youth an ideal setting to learn new things of interest to them, as the service environment has given tangible resources and mentoring support that are conducive to rebuilding the trust of homebound youth to outsiders. That is, the focus is placed on interest-based learning for satisfying their learning needs and resuming normal social interactions with others rather than on seeking formal educational or vocational qualifications which were too demanding to them. Another advantage of giving young people

with social withdrawal experience a variety of choices of one-off events or short-term courses with just a few sessions is to give them a chance to make decision on their own, try out new things without making any commitment, and make new friends who may have the same interests or the same background of having self-seclusion and social isolation experience. In an environment that is relatively free of name-calling, teasing, and testing out behaviors, and in an environment where people are more sympathetic and supportive to each other, young people with shyness or social phobia are more able to develop sociable and prosocial behaviors for exploring and experimenting informal relationships in the real world. This reminds social workers the importance of working with youth clients in a professional yet informal manner which can provide them a secure place for appreciating and building informal and faithful peer relations that will last much longer than formal worker-client relationship [5].

In another career intervention program supervised by the first author, young people with seclusion experience were invited to visit shelter dogs which had abused or abandoned experience before and engaged in human-canine activities designed to promote a positive relationship between humans and animals. Narrative review is used to help youth participants explore the values, attitudes, skills, and knowledge involved in caring for sheltered dogs and find meaning in life. Young people reported that a reciprocal relationship was experienced in the process of caring for the dogs, which offered trust, acceptance, unconditional love, and nonjudgmental contact. The youth participants offered love, care, companionship, and a secure interacting environment for the dogs, which encouraged them to believe in their ability to care for living beings. A positive self-identity with a greater sense of achievement and self-worth was built up. The interaction was also beneficial to the dogs as they became trusting, confident, and accepting of human care. Such a positive response from the dogs further reinforced a sense of contribution among the youth participants. Many of them were inspired to explore animal care work and to promote animal welfare. The program also supported young people to become mentors, to share their transformations with new members of the program and with parents, teachers, and other community stakeholders. And through the provision of workplace learning and mentoring opportunities, they were facilitated to explore about the possibility of continuing doing volunteering in animal care and animal rights and developing a vocational career related to animal care or pet care industries. In a career and life adventure planning project funded by the Hong Kong Jockey Club Charities Trust which is the number one donor in Hong Kong, the experience to date shows that when young people such as those with chronic social withdrawal experience are provided an enabling environment with resources, opportunities, and networks, they can archive, reflect, and develop their own set of transferable values, attitudes, skills, and knowledge across different domains of paid and unpaid work experiences [22] and define their own meaningful career roadmap; they can and will make positive contributions toward a better and more inclusive world [23].

3.3 Interdisciplinary collaboration across healthcare and social care disciplines for research and youth engagement

In a brand-new interdisciplinary study conducted by a team of academics and researchers of the background of nursing and social work professions in Hong Kong, a total of 104 youth clients with social withdrawal experience were invited to participate in a research study as respondents by means of completing a set of questionnaires and going through some anthropometric and physical measurements. Measurements were taken by a well-trained nursing student, which include body

weight, height, length and width of ears, blood pressure, pulse rate, respiratory rate, and waist and hip circumference which were recorded and used for calculating the body mass index and waist-hip ratio. This interdisciplinary study across nursing and social work professions is the first ever study studying the physical health aspects of *hikikomori* [17].

This group of youth respondents living with a *hikikomori* lifestyle was found to have a high incidence of prehypertension and hypertension, which were correlated with the weight gains during the course of their secluded life at home. The length of *hikikomori* duration was associated with a shift of body weight from underweight to overweight and obesity and also with elevated blood pressure. This may be resulted from their unhealthy diets and distorted sleep patterns over the course of extended social withdrawal. Over 1 year, the respondents showed improvement in health measures including reduced blood pressure levels and waist-hip ratios. Most surprisingly, the prevalence of hypertension was significantly reduced from 15.4 to 9.0% over 1 year, which was below the 12.6% adult prevalence of diagnosed hypertension [24] and the 12.8% age-specific prevalence for young people aged 15–34 [25]. The prevalence of prehypertension also slightly dropped from 31.7 to 29.1% [17]. In 12 months' time, they also witnessed an upward trend of practicing moderate-intensity exercises among the respondents.

This positive change in terms of health actions taken by the respondents could be related to two episodes of experiences. First, the respondents were informed by the nursing researcher the measures in an archived format immediately after the physical assessment, which could trigger their health awareness and their eagerness to take actions to make improvements for the next round of follow-up assessments 6 and 12 months after. Second, although social workers are not health professionals by themselves, they can use the archived record as a talking point and remind their clients to lead a healthy lifestyle by doing more exercises and developing healthier diet habits. That is, taking actions for making improvement with health and physical measures to impress oneself and others over time is considered conducive to creating a sense of expectancy among the respondents. The practice of using archived records for talking and reminder purpose consistent with the health belief model which emphasizes beholders' awareness of threat perception (risk) and positive initiatives (opportunity) is the key to trigger appropriate actions for realizing positive health outcomes [26, 27]. This implies that promoting interdisciplinary collaboration across healthcare and social care disciplines is not only good for breeding new ideas for conducting research studies but also for producing health measures in the form of visible archive for engaging secluded youth to develop a sense of expectancy and a sense of agency for making improvements with their lifestyle and health outcomes.

As viewed from the nursing perspective, the focus is placed on providing care using a holistic approach and with interdisciplinary collaboration to ensure the best possible outcome for the client. Nursing care models and the “nursing process” help guide and organize how care is provided to clients. As demonstrated in the aforementioned interdisciplinary study of youth living a *hikikomori* lifestyle, the youth group showed interest to make improvement of their own health, which coincides with the principles of the McGill model of nursing where the client's health is improved by means of actively engaging them in the learning process of their care [28]. The aforementioned study identified many health risks of the youth group such as prehypertension, hypertension, obesity, an unhealthy diet, and disrupted sleep patterns [17]. If these were the health focuses for the client, the nursing intervention would be to provide health education or promotion knowledge to clients in order to help them make an informed choice regarding their care or activity performed on a daily basis. Any application of an holistic approach to care

in future study should also address the health concerns of the clients' family, understand their family dynamics, identify any environmental factors that may affect or help the clients, locate health resources and initiate referrals as appropriate, ensure clients' exercise of autonomy, facilitate communication between the interdisciplinary healthcare team and the clients, while ensuring professionalism, ethical practice and confidentiality.

In cooperation with other healthcare professionals, nursing interventions offer access to empirical health data as well as clients' specimens for a better understanding of the pathophysiology. Biomedical scientists look into the potential biomarkers for making accurate diagnosis and to explain the pathological pathways, in order to allow for effective medical treatments. Recently, based on the assumption of avoidant personality disorder as the most common comorbidity of *hikikomori*, a medical team has evaluated 101 blood specimens obtained from 46 males and 55 females. Results of this study suggested two gender-different biomarkers potential for explaining the biological basis of *hikikomori*, namely, uric acid (UA) in men and high-density lipoprotein cholesterol (HDL-C) in women, which were expressed in lower serum levels than with healthy controls [29]. This has opened up a new page in this field of research with increasing trend of the *hikikomori* prevalence worldwide.

4. Advocacy work

Socially withdrawn youth suffering from social isolation have not been able to receive regular targeted funding support from the Social Welfare Department (SWD) which is responsible for allocating and administering the bulk of government-funded social welfare services in Hong Kong, whether in statutory, governmental, or NGO settings. On many different occasions, SWD bureaucrats just replied that integrated youth service teams are capable of outreaching secluded youth in the community. These integrated teams are established to provide a wide range of services including children and youth center services, school social work services, and outreaching youth work under one management to meet the multifarious needs of children and youth aged 6–24. However, as these homebound cases are very much demanding of time and effort, and the integrated teams are under pressure to deliver sufficient service output to satisfy the Funding and Service Agreement requirements of the SWD, this invisible group of atomistic individuals would be subject to the risk of receiving inadequate attention and services from integrated teams. Wong argued that government inaction on this specific “hidden problem” which does not upset the community like their street counterparts with antisocial behavior has resulted in ironing out the diversity and differences of NEET youth [6], thus reproducing the inverse care law: availability of services tends to vary inversely with the need of the population served [30]. Advocating for a concerted social policy and more financial and manpower resources to set up separate teams all over Hong Kong to outreach young people in social withdrawal can prevent extended social isolation and consequential poor physical and mental health outcomes from taking place. With the consolidation of practice wisdom and evidence-based practice developed on interdisciplinary collaboration platforms with input from a diversity of health and social care professionals such as social workers, teachers, nurses, doctors, animal-assisted therapists, physiotherapists, physical exercise experts, etc., and with resources, opportunities, and networks by means of engaging multiple stakeholders including employers, parents, and mentors, youth with chronic social withdrawal and social isolation experience can be facilitated to make a transition into the community as a student, trainee, or worker

in the conventional sense or as a lifelong learner eager to be engaged in paid and unpaid work experiences and other life-wide experiences in order to map out their career pathway with life's deep meanings.

All this does not rule out the possibility that with the support of solid research work and studies, social workers and youth work practitioners can share their practice wisdom and evidence-based practices with their professional counterparts working in school, center-wise, and other community-based settings. And it is entirely possible for different professional parties to work in a collaborative manner to involve multiple stakeholders including employers to provide seamless provision of services ranging from a variety of home-based interventions to a plurality of initiatives and measures including interest development, workplace learning, and other on-the-job and corporate mentoring programs.

5. Concluding remarks

Social isolation experienced by young people in the form of extended or chronic social withdrawal at home for a protracted period of time is characterized by its invisibility and inaccessibility to adequate social provisions. For each single and unique case of youth with social withdrawal experience, helping professionals have to address the temporal, spatial, relational, and status-wise parameters in a comprehensive manner in order to map out the context and direction of professional intervention.

However, self-seclusion with resulted stagnation in transition to a legitimate social status does not imply any clientele inactivity at home. Starting where the clients are is to stay tuned with their current interest, routines, and activities they do at home, which can provide the basis for interaction, rapport building, and modest level of conversations. This can help scaffold their further interest- and activity-based learning at home and pave the way for pursuing beyond home learning and fulfilling unfinished tasks in the community.

Individual young people have to learn to interact with others, kick off learning momentum, develop a healthy diet, do exercises, step out their alienating comfort zone, reengage with the community, try out workplace learning, map out their career roadmap, and make contributions to others and the community, but it will not be effective if they are confronted with blaming-the-victim discourses and circumstances unfavorable for realizing their abilities, strengths, and aspirations. Examples of such circumstances include the inadequacy of structural and institutional support; the lack of institutional, organizational, and professional flexibility; the lack of social networks and social capital; the lack of cross-sectoral and interdisciplinary collaboration; and the lack of the provision of an enabling environment where young people can enjoy access to resources, opportunities, and networks for reflecting and developing transferable values, attitudes, skills, and knowledge across different life domains.

Giving young people an enabling environment by means of engaging the participation and involvement of multiple stakeholders for the sake of enhancing youth's agency, esteem and expectancy can nourish their hopes and raise their aspirations. Again, it is important to seek research funding support to conduct empirical interdisciplinary research studies that could address both the personal and the structural aspects of social withdrawal and social isolation and deliver an analysis of problems and interventions. The causes of social isolation of young people in the form of extended social withdrawal at home are both personal and structural, and thus the conceptualization and delivery of viable measures and interventions have to address both personal and structural dimensions [5, 31]. Interdisciplinary collaboration in

terms of practice and research is expected to play a growing important role to do advocacy along this line in the journey ahead.

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Conflict of interest

The authors declare no conflict of interest.

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Section 2

Social Isolation

Social Connectedness and Wellbeing of Ageing Populations in Small Islands

Sheena Moosa

Abstract

This chapter presents the findings relating to social connectedness and isolation from a sample survey of the 393 older people aged 65+ years in an island context, the Maldives, where families are often dispersed across many islands due to the nation's particular geo-spatial features. Maldivian society while traditionally collectivist, is currently showing effects of modern development on its social structures and values. Against this background, the life domain of social connectedness and social isolation is conceptualized. Although operationalized to include the community, the findings stress the importance of family and friends, rather than the community, in providing social connectedness. There is an indication that family and friends provide experiences that differ emotionally and that varied composition of social networks provide different experiences for social connectedness. Factors within this life domain demonstrate specific aspects of social connectedness in the small island context in contrast to industrialized country contexts.

Keywords: social connectedness, isolation, social network, small islands, wellbeing

1. Introduction

Social connectedness has consistently shown a positive correlation with quality of life and wellbeing across different societies, especially among older populations [1, 2]. Correspondingly, social isolation and loneliness have been associated with poor wellbeing [3, 4]. As such both social isolation and social connectedness are conceptualized together. Social isolation is perceived not only by the number of contacts in a person's social network but the sense of companionship and belonging one derives from the contact [5]. This view can be applied to social connectedness as even large social networks does not always lead to a high level of emotional fulfilment and rewarding, and may even be associated with emotionally negative experiences and loneliness [6]. It is thus contingent that if loneliness is "the situation experienced by the individual as one where there is an unpleasant or inadmissible lack of (quality of) certain relationships" [5], social connectedness is the other (more positive) side of the same coin. While some define social connectedness as the "presence or absence of social ties" [7], others suggest it is the "relationships people have with others" [8].

While social connectedness (or the lack of it) plays a critical role in wellbeing, it has been established that with age, the size of one's social networks decline [9, 10].

The theoretical perspective on life course suggests that an individual forms a convoy of social relationships from childhood to old age. But relationships with colleagues, neighbours, friends and even family, changes and some terminate due to death, migration, divorce, retirement and health reasons [11, 12]. However, some have argued that even though loss of network contacts occur during the life course, some of these are compensated by gains through life events such as the birth of grandchildren, marriage, and even migration, leading to changes in the composition of social networks and their function [13]. It has been argued that even those older people who have many social contacts focus on maintaining a core social network that is emotionally supportive and rewarding [9, 13]. This observation is explained by the socio-emotional selectivity of older people who become more discriminatory in their social contacts; they often choose to maintain only those social contacts that are emotionally meaningful, rather than acquaintances and novel social contacts [14, 15]. Thus, in older years, social connectedness is maintained through a network of family and close friends that provide emotionally rewarding experiences, rather than colleagues or casual acquaintances [16].

Social connectedness is operationalized by focusing on different aspects of social relationships such as social ties, social networks, social support and social integration [17]. While these aspects are examined under the broad umbrella of social connectedness, in research, distinctions are made between these terms on the argument that these are different aspects of social relationships within the social network of an individual [7, 18]. In a more Durkheimian approach, the wider social and cultural context is taken into account, and a framework of a social network that includes both upstream social structural conditions and downstream behavioural, psychological and physiological pathways that impact on wellbeing has been put forth [17]. This conceptualization provides for a more comprehensive approach to identifying network characteristics that allow for social support, social engagement, person-to-person contacts and access to resources [17, 18]. Proponents of this conceptualization view social connectedness through the opportunities provided in the context of a social network [7]. The characteristics of social networks that shape social connectedness include the size and composition of the network, physical proximity of network members, and number of members with whom one has frequent contact [16]. For example, the English Longitudinal Study on Ageing, observed that the quality of life of older people significantly increases when they have many close relationships and more frequent contact with friends [19]. Social support, especially non-instrumental emotional support, has been shown to operate through social networks affecting the social connectedness of an individual [7, 20]. The focus of ageing research in small island countries in the Pacific and Caribbean has been on social support, in terms of the provision of care rather than on social connectedness itself, perhaps due to the extended family norm and cultural belief that children should provide care and support for their elderly parents [21, 22].

Despite the countless ways of operationalizing social connectedness, it is important to note that different dimensions of social connectedness are themselves positively associated with wellbeing [2, 23]. The Survey of Health, Ageing and Retirement in Europe as well as studies in East Asia such as China have shown that while the degree of social interactions with family members and friends enhances the wellbeing of older people, it is the quality of the social contact that have a stronger association with wellbeing [24–27]. Similarly, research in New Zealand has shown that satisfaction with social contacts positively influenced one's wellbeing while the number of contacts did not do so [2]. These findings provide support for the theoretical perspective of socio-emotional selectivity related to the social network and social connectedness of older people. It has been proposed that the characteristics of the wider social context (cultural norms and values), social change (urbanization), economic factors (poverty) and public policies also influence

network formation and subsequent social relationships [17]. For example, in Singapore, social relationships with children, parents and friends, and involvement in leisure and spiritual activities with others were found to be important dimensions that correlate with wellbeing [28]. A study in the Caribbean islands found that older people often engage in a number of informal social activities, but noted that the level of social engagement is influenced by their socio-economic situation [21].

Proximity has been identified as a factor closely related to the extent and quality of social interaction, either with family or friends [10, 29]. In the context of geo-spatially isolated populations like Maldives (very small island countries where the population is dispersed across the ocean), physical proximity to network members is of special interest when examining social connectedness [16]. The characteristics of small island contexts are different from industrialized country contexts as socio-cultural practices assert the central role of family in social networks, while the geo-spatial situation results in the separation of older people from their kin and other family relations. Thus, the characteristics of geo-spatially isolated island communities such as few occupational choices, limited health and social services, poor transport, sensitivity to traditional and religious values, and limited privacy have a greater potential to decrease the opportunities for different types of social contact with family and friends of older people [16]. Migration of adult children also causes a reduction in the opportunities for social contact, thereby undermining family interactions for older people [11, 21]. Furthermore, it was observed in the Pacific islands, older people in both rural and urban areas were found to be socially isolated, perceived as receiving a low level of respect and facing a more difficult financial situation than younger people [11]. The unique aspects of geo-spatially isolated small island communities thus characterize the ability to interact with family, friends and community, and to be socially integrated thereby constituting the important aspects of social connectedness that contribute to wellbeing [16].

2. Concept and methods

In the research in Maldives, data was collected from a sample of 393 older people 65 years and over covering 11 islands of Maldives. Ethics approval was obtained from the National health research committee of Maldives [30]. Wellbeing was regarded as the state of being; a sum of experiences in a range of life domains including social connectedness. Keeping with this definition, the measure used for this indicator is the self-reported satisfaction level to a single item question 'How satisfied are you with your life as a whole?' The responses reported on a Likert scale of 5-1, from 'very satisfied' to 'very dissatisfied'. For the analysis, the data was compressed (4 to 5 = 3), (3 = 2) and (1 to 2 = 1) and recoded. The computed score for each respondent was used as the score for the level of satisfaction.

Given the collectivist nature of the societies and extended family norm in the small islands of Maldives, social connectedness was conceptualized to encompass structural and functional characteristics of social interactions. Social connectedness was defined as the 'state of social integration of the individual through networks of family, friends and community through social contact, social engagement and social support' [16]. As social connectedness is a multifaceted and comprise of interactions with family, friends, neighbours and the community, it was operationalized using the diverse dimensions of social relationships such as social network, social support and social engagement [17]. Specifically, given the collectivist nature of island communities and the effect of changing family structures from extended to nuclear families, older people's social contact with family and friends is operationalized as separate factors [16, 21, 31].

Objective and subjective measures were used as indicators of social connectedness. The subjective indicator of social connectedness was measured with ‘satisfaction with overall social connectedness’. In addition, ‘satisfaction with social connectedness with family’, and ‘satisfaction with social connectedness with friends’ was also used to allow for a comparison of the contribution of these two dimensions of the social network to overall social connectedness and wellbeing [16]. Responses were recorded on a 5-item scale and compressed for analysis, similar to the measure of wellbeing as stated above.

The objective level of social connectedness was operationalized with the view that social connectedness occurs through a network of contacts with the family members, friends and community. Such contacts are created through social support and casual or formal social engagement that older person perceives as emotionally rewarding or unsatisfactory. The social network characteristics such as composition, frequency, mode of contact and place where social contact occurs are used for measure network factors. Social support and personal activities outside the household, participation in group activities with family and friends, and participation in religious and community activities were also recognized as constituting different opportunities for social interaction. See in Moosa [16] for a detail account of the social connectedness measure.

3. Findings: the impact of social connectedness on wellbeing

The findings demonstrate that social connectedness is an important determinant of wellbeing (**Table 1**). Specifically, social connectedness has a significantly large impact on the wellbeing of older people in Maldives (overall social connectedness having a 29% shared contribution with wellbeing).

The results also show that the contribution of social connectedness with family to the wellbeing of older people in Maldives is larger than that of social connectedness with friends. The correlation statistics (**Table 1**) show that ‘satisfaction with social connectedness with family’ has a significantly larger positive correlation with wellbeing (26%), compared with that of the ‘satisfaction with social connectedness with friends’ and wellbeing (18%).

The Pearson’s correlation statistics (**Table 2**) show that a number of factors that significantly ($p < 0.01$) contribute to ‘satisfaction with overall social connectedness’ also have a significant correlation ($p < 0.01$) with wellbeing. The only exception is the type of contact ($p = 0.604$). However, the r^2 statistics indicate that the size of the contribution by each variable to the ‘satisfaction with overall social connectedness’ and wellbeing is different.

The variables that make the largest contribution to ‘satisfaction with overall social connectedness’ is the ‘family contact frequency’, accounting for 13% of the contribution (see **Table 2**). Other variables that show significant correlation with

Wellbeing (overall satisfaction with life)	Satisfaction with overall social connectedness	Satisfaction with social connectedness with family	Satisfaction with social connectedness with friends
Pearson correlation	0.538**	0.506**	0.417**
r^2	0.289	0.256	0.174

Reproduced from Ref. [16].

**Correlation is significant at the 0.01 level (2-tailed).

^aListwise N = 389.

Table 1. Pearson’s correlation^a statistics for wellbeing and measures of social connectedness.

Variable	Statistical measure	Satisfaction with overall social connectedness	Wellbeing (Overall satisfaction with life)
Social support family	Pearson	0.191**	0.195**
	Sig. (2-tailed)	0	0
	r ²	0.036	0.038
Family contacts number	Pearson	0.317**	0.240**
	Sig. (2-tailed)	0	0
	r ²	0.1	0.058
Friends contacts number	Pearson	0.266**	0.296**
	Sig. (2-tailed)	0	0
	r ²	0.071	0.088
Family contact frequency	Pearson	0.363**	0.377**
	Sig. (2-tailed)	0	0
	r ²	0.132	0.142
Friends contact frequency	Pearson	0.321**	0.299**
	Sig. (2-tailed)	0	0
	r ²	0.103	0.089
Family contact type	Pearson	0.175**	0.026
	Sig. (2-tailed)	0.001	0.604
	r ²	0.031	0.001
Friend contact type	Pearson	0.209**	0.102*
	Sig. (2-tailed)	0	0.045
	r ²	0.044	0.01
Religious social activity	Pearson	0.195**	0.279**
	Sig. (2-tailed)	0	0
	r ²	0.038	0.078
Informal personal activity	Pearson	0.179**	0.285**
	Sig. (2-tailed)	0	0
	r ²	0.032	0.081
Social activity with friends	Pearson	0.324**	0.371**
	Sig. (2-tailed)	0	0
	r ²	0.105	0.138
Social activity in the community	Pearson	0.160**	0.164**
	Sig. (2-tailed)	0.002	0.001
	r ²	0.026	0.027
Social activity with family	Pearson	0.315**	0.312**
	Sig. (2-tailed)	0	0
	r ²	0.099	0.097

Reproduced from Ref. [16].

**Correlation is significant at the 0.01 level (2-tailed).

*Correlation is significant at the 0.05 level (2-tailed).

^aListwise N = 387.

Table 2.
 Pearson's correlation^a statistics for variables that determine satisfaction with overall social connectedness and wellbeing.

the 'satisfaction with overall social connectedness' and have an effect size of 10% or more are 'social activity with friends' ($r^2 = 0.105$), 'friends contact frequency' ($r^2 = 0.103$), 'family contacts number' ($r^2 = 0.100$) and 'social activity with family' ($r^2 = 0.099$). The contribution of the 'type of contact', 'social support family', 'social activity in the community', 'informal personal activity' and 'religious social activity' to 'satisfaction with overall social connectedness' are each small, accounting for 3–4%. The cumulative contributions from variables on 'family network' account for 40% of the shared variance with 'satisfaction with overall social connectedness', while variables on 'friends network' account for 31%, and 'community and personal social engagement' accounts for 10%. These results thus confirm that, in the Maldives context, family network makes a larger contribution to the individual's overall social connectedness than friends.

In a similar way, these factors show direct correlation with wellbeing, with the 'frequency of contact with family' having 14% shared contribution ($r^2 = 0.142$) with wellbeing (Table 2). The contribution by the 'number of family contacts' to wellbeing is lower (6%), compared with its contribution to 'satisfaction with overall social connectedness' (10%). However, the contribution by the 'number of friends contacts' to wellbeing is higher than that for 'satisfaction with overall social connectedness', 9% for the former as compared with 7% for the latter. 'Engagement in social activity with friends' accounts for 14% of shared contribution with wellbeing and 'engagement with social activity with family accounts' for 10% of shared contribution. The shared contribution of 'engagement in religious social activities' (8%), and 'informal personal activities' (8%) are higher with wellbeing than with 'satisfaction with overall social connectedness' (4% for religious social activities and 3% to informal activities). The cumulative contributions from variables on family account for 34% of the shared variance with wellbeing, while variables on 'friends' account for 33%, and 'community and personal social engagement' accounts for 19%.

3.1 Placing social connectedness in the context of small islands

As in many small island countries, Maldivian society is collectivist, but given the geo-spatial characteristics many families are dispersed across different islands. Against this background, the findings established the important contribution of social connectedness to the wellbeing of older people. This was expected, given the collectivist social arrangements where interdependence, rather than independence, is the societal norm. The findings confirm that the prevalent socio-cultural norms and practices in small island countries such as Maldives provide the context that facilitates social connectedness despite its geo-spatial challenges.

It may be that the role of social connectedness in wellbeing has been recognized in previous research, but the conceptualization of social connectedness in the context of small islands of Maldives is different, given the collectivist social context with the central role of extended family. This makes comparison with other findings difficult, but the observations in this study generally align with those found in other research into social networks, social engagement and social support and wellbeing [2, 7, 18, 32].

The important aspects of social connectedness that have an impact on wellbeing relates to the conditions made available for the individual to interact with others and the social values and norms inherent to the collectivist social institutions to support such interactions. Of the various factors that was operationalized to measure social connectedness in this study, the items that make 10% or more contributions to satisfaction with overall social connectedness are 'family contact frequency', 'friends contact frequency', 'family contacts number', 'social activity with family', 'social activity with friends', and 'social support family'.

In the islands of Maldives, many older people are separated from several family members due to the specific geo-spatial characteristics of small dispersed islands with limited access to transport and technology as well as opportunities for economic and social activity. This situation inherently creates conditions to limit social connectedness and increase social isolation. However, the findings indicate that older people are able to adapt to the changing circumstances of a dispersed family in the isolated islands, perhaps as a result of repeated experiences of such instances during their lifetime. In addition, the historically large family size and the collectivist social values and norms appear to be conducive to social connectedness in these circumstances. The findings show that older people in the Maldives islands typically have a large network structure (with five or more family members and one to four friends, results not reported here) reflecting the kinship or friendship relations with many households in the community, as is reported as the case in other island countries [21, 33]. This finding supports the convoy theory that losses in the social network of family is compensated for by formation of new social contacts and friendships from the island community. Furthermore, this observation fits with the broader perspectives on formation of networks in collectivist cultures where it is postulated that when faced with institutional changes, people from collectivist cultures tend to rely on groups that share similar cultural values and beliefs, in this case from the same island community [34]. In the small islands, the common social values and norms along with the friendship linkages among households in the community allow for establishing new social relationships. The high satisfaction with social connectedness ‘with family’ as well as ‘with friends’ supports the premise that older people are able to maintain emotionally rewarding social relationships with family and friends as well as form new relationships with members from the community that share cultural beliefs.

However, social engagement with the wider island community, though significant, was low. This is in contrast to the findings in developed country contexts where engagement in the community is an important contributor to wellbeing [2]. Low social engagement with the wider community can be attributed to the cultural beliefs in the collectivist societies that tend to prioritize family goals and interactions over time is a requisite to develop close relationships [35, 36]. Moreover, it is proposed that in collectivist cultures interactions are often segregated and are preferred through established social institutions [34]. While such cultural beliefs tend to maintain older people’s social networks within family and close friends, the geo-spatial isolation of the islands limit opportunities for wider social engagement. As such, structured community-based social activities for older people are irregular and occasional in the islands of Maldives, as in other small island countries [22]. Moreover, formal voluntary associations working with older people are non-existent in the islands of Maldives (except in the capital island), hence limiting the opportunities for social interaction with the wider community. In addition, there is a tendency not to include older people in some of the community-based activities as it may appear to be disrespectful, as aged persons maintain a high social status in such small island communities [16, 22]. Despite the low social engagement with the wider community compared to that of family and friends, the statistically significant association indicates that different types of social engagement generates experiences of social connectedness that positively affect wellbeing. While the findings reinforce the view that social connectedness of older people is established largely within the extended family and with close friends in the small islands of Maldives, it also points to the importance of establishing new social contacts outside the family networks, in the face of changing social institutions in Maldives.

The findings thus support the premise that social contact and interactions with friends and family is facilitated by collectivist social arrangements despite the

geo-spatial isolation of the islands of Maldives. The collectivist social institutions and cultural beliefs together with the kinship and friendship relationships that exist in the small communities thus provide a conducive social environment for social connectedness of older people.

3.2 The role of the extended family in social connectedness in small islands

The lives of older people in Maldives are anchored within the extended family [16]. The collectivist cultural beliefs maintain an expectation for social interaction and social support from the family, as is the case for other island countries [21, 22]. The central role of family is supported by the finding that ‘satisfaction with social connectedness with family’ makes a significantly larger contribution to wellbeing (26%), compared with that of ‘satisfaction with social connectedness with friends’ (17%). However, Maldivian society is undergoing social change as demonstrated by the shift from extended family arrangements to a nuclear family structure, as is the case in a number of small island countries [16, 37]. This has the potential to weaken the social connectedness of older people, exacerbated with the migration of adult children and friends to other islands for education, work and other services. Despite this, the findings show that the majority of older people in Maldives continue to live in extended family households [16]. This opportunity is created from the historically very large family sizes and enables older people to live in an extended family environment, though with fewer kin. Such living arrangement provides for a large social network of family members and facilitates a high degree of social connectedness and in turn wellbeing.

The findings show that the structural characteristics of the network (such as network size) make a smaller contribution to wellbeing than the frequency and degree of social interactions that occur with the family members. This aligns with the view that existence of contacts is not adequate to form interpersonal relationships, but repeated interactions over time are essential [35]. In fact, of the factors that constitute social connectedness, ‘family contact frequency’ was the most important contributor to wellbeing, followed closely by the ‘social activities with family’ (providing more than 10% contribution). In Maldives, given the collectivist cultural beliefs and expectation of interdependence, the family relationships form the core of the social interactions. The extended family environment provides opportunities for a wide range of interactions with the family network that provide for both emotional and instrumental support [16]. As such, within the extended family environment, the interactions with children, grandchildren and other relatives that provide varied experiences of social connectedness that may be rewarding or dissatisfying. As the findings indicate a high level of ‘satisfaction with social connectedness with family’, it can be concluded that, at present, the experiences from social connectedness in the extended family is rewarding for older people in Maldives.

The social support from the family was found to be an important contributor to social connectedness (more than 10%) of older people in Maldives islands. This is consistent with the cultural practice and attitudes towards ageing and care of older people in collectivist societies and aligns with previous research on approaches to care of older people affecting social connectedness [16, 38]. The findings indicate that social support from family provides for opportunities for social connectedness of older people with their family network. The importance of the opportunities for social interactions with extended family through social support is supported by the significant contribution of social support from family to social connectedness and wellbeing.

Social support from family also made a significant contribution to wellbeing (4%). This is in contrast to findings from industrialized societies where social support from family was found to be negatively associated with wellbeing [20].

This may be a reflection of the expectation of social support from kin that is also linked with emotional interactions such as bonding and family affiliation [26, 33]. Furthermore, this is a reflection of the cultural beliefs around collectivism and individualism in these different contexts [34, 35]. These conflicting findings can be attributed to the different societal attitudes toward dependence, where receiving support from family is an expectation in small island societies, but regarded as a threat to independence in industrialized societies [39]. In the Maldivian society, there is an expectation that the family will care for and provide support to older people and this collective societal attitude towards dependence, explain the findings. The familial responsibility of caring for older family members (even when they are bed-ridden), therefore, provides for social integration within the family, and allows for interaction with family members, as has been observed in other island countries [22, 33].

However, in the extended family environment, the older person has less choice in family contacts and some of these contacts may not be as rewarding as others and may have negative effects on wellbeing, as they are not always supportive [20]. In such environment the older person does not have the opportunity to be selective in their social contacts and interactions. Furthermore, if such contacts and interaction does not meet the cultural expectations, it is likely to reduce the satisfaction derived from the contact. This is reflected in the smaller contribution of 'family contacts number' to wellbeing than 'friends contact number', implying that having a large family network, does not necessarily provide emotionally rewarding experiences. In contrast, older people have the opportunity to be selective in friendship contacts and interactions that are emotionally rewarding [15]. This proposition is further supported by the finding that 'social activity with friends' has a similar contribution as 'social activity with family' to the satisfaction with overall social connectedness. However, social connectedness with friends is challenging in island countries, as older people are often faced loss of friends that migrate to other islands for better health care and social support from family. At the same time, the limited amenities and services in the small islands limit the opportunities for older people to interact and engage in social activities with friends, as observed in the Caribbean island countries [33]. Nonetheless, as discussed earlier, the smallness of the communities with shared cultural beliefs in the more isolated islands means there are kinship and friendship relationships in close proximity facilitating social contact. The findings, thus, establish that although family is the basis of social connectedness, friends also play an important role by providing different opportunities and experiences to those provided by the family.

Thus, it is established that the collectivist cultural beliefs and predominant extended family living arrangements in Maldives, couples with the expectation of social interaction and the care of the older people by the family results in a social network that is anchored within the family. In this context, older people achieve a sense of social connectedness not only through social support, but also through frequent contact and interactions with family members within the extended family household that generate emotionally rewarding experiences [16]. This is a marked difference to the situation in industrialized contexts and, therefore, distinctive to the island country context. The small size of the community with shared cultural beliefs in the small islands is also conducive for older people to compensate for loss of friends through the life course. Furthermore, they are able to exercise selectivity in their contacts with friends resulting in a smaller number of friends, but achieve different emotional experiences from that of family. It is proposed that when composition of the social network that includes Both family members and friends, there is a higher satisfaction with social connectedness and wellbeing. However, there is limited opportunity for older people for social engagement within the wider

community, that if improved is likely to further improve social connectedness of older people in the small islands. Thus, the findings underscore the importance of family, yet indicates that social connectedness through a combination of family and friends can be more favourable for wellbeing.

4. Conclusion

It is established that social connectedness is one of the most important aspects of life that impact wellbeing of older people where social network, social support and social engagement make significant contributions. The findings from this research in Maldives stress the importance of family and close friends, rather than the wider community in providing social connectedness. This is attributed to the socio-cultural context of small islands where collectivist cultural beliefs and extended family arrangements prevail that compensate for geo-spatial isolation of the island communities. In the small island communities where older people often lose contact with their friends, the smallness of the island communities with shared culture is conducive to the formation of new kinship and friendship relationships. It appears that a social network that includes both family and friends provides different emotional experiences that enhance social connectedness and wellbeing of older people in these small islands. Nevertheless, there is clear evidence that the family occupies the central role in the social network, social engagement and provision of social support than friends, influenced by the collectivist beliefs of interdependence.

The collectivist social values and social arrangements of small island communities enable a high level of social connectedness, despite the geo-spatial challenges. It also highlights the importance of promoting social connectedness in small islands with a focus on the collectivist social arrangements, including both family and friends, rather than on the wider community and formal programmes.

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Conflict of interest

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The data and analysis presented here is drawn from the original research conducted for a PhD thesis by the author.

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Engaging College Men in Conversations and Activities Related to Dating and Domestic Violence

Laura Finley

Abstract

This chapter describes a unique effort to engage college men in discussion and activism about dating and domestic violence. Given that dating violence is one of the most frequently occurring forms of violence on college campuses, it is imperative that campuses provide education and programming about its scope, extent, and characteristics, as well as inform students how they can receive help. Even more, campuses have a responsibility to encourage students to take action to remedy social problems like dating violence. Yet engaging men in such efforts can be challenging, given that many still see dating and domestic violence as “women’s issues” or do not feel welcome in such movements. The chapter describes an initiative called the College Brides Walk, which integrates experiential learning as a tactic for engaging men. It concludes with lessons learned and recommendations.

Keywords: dating violence, domestic violence, gender-based violence, engaging men, service-learning

1. Introduction

Dating and domestic violence remain among the world’s most intractable social problems. In 2006, UN Secretary General Kofi Annan declared violence against women to be the most pervasive and “perhaps the most shameful human rights violation” on the globe, given that an estimated one-third of the world’s women will endure an abusive relationship [1]. Research is clear that women are at greater risk in the home than anywhere else [2]. Despite decades of attention to the issue in the U.S., the U.S. Department of Justice has estimated that from one-quarter to one-third of women will be the victims of domestic violence during their lifetime.

The problem of domestic and dating violence is particularly acute on college campuses, both in the U.S. and globally. Although college students are subject to many types of violence, such as bullying and gang violence, domestic and sexual abuse are among the most pervasive [3]. Straus [4] found 17–45% of university students (31 colleges) in 16 countries had experienced physical abuse, while [5] found 21% of college students report experiencing abuse in a current relationship, and 32% in a previous relationship.

Despite these high numbers, dating abuse on college campuses remains significantly underreported. Data show that most victims do not tell any adults, about the abuse let alone authorities. College-aged victims are most likely to tell a friend about the abuse [6].

These are difficult subjects to address in college classrooms. This is in due to the general trend to teach students through passive methods and distrust that students can handle the material. As Giroux [7] explains, “Young people are increasingly devalued as knowledgeable, competent, and socially responsible, in spite of the fact that their generation will inevitably be the leaders of tomorrow” (p. 122). Professors often complain that students resist discussing controversial issues in the class, and many times blame students for being naïve or disinterested. Yet this dismissive attitude is part of the problem; perhaps, it is that students have not been asked their thoughts on what would be most effective in helping to solve problems and not, as students often assert, just subject to lectures that are depressive and uninspiring.

Because dating and domestic violence are so pervasive, discussion of these issues can be triggering for many who grew up in abusive homes or who have experienced it with a partner. As such, the topics are often avoided, or addressed in only a cursory fashion [8]. Furthermore, many educators are woefully unprepared to tackle such topics, and as such, often avoid the topics or address them poorly. Additionally, some insist that the classroom is a “neutral” place, although obviously it cannot. But the façade of neutrality means a limited, at best, discussion of the complexities of domestic and dating violence, patriarchy, gender inequality, and structural violence. Educators who address controversial issues run the risk of being labeled “too liberal” or extreme [9]. Yet another concern is how to teach about domestic and dating violence in a way that moves past the stereotype that these are “women’s issues.” Furthermore, educators must be careful to address the over-representation of males as perpetrators and the gender dynamics involved in many abusive relationships while not alienating male audiences.

This chapter focuses on innovative methods to address dating and domestic violence, in particular, with male students. It details a service-learning project that raises awareness about these issues and highlights the efforts taken to include males and how those have been received. The chapter concludes with recommendations for increased involvement of male college students in this type of social justice campaign.

2. Domestic and dating violence on campus

Dating violence is “the physical, sexual, psychological, or emotional violence within a dating relationship, including stalking. It can occur in person or electronically and might occur between a current or former dating partner” ([10], para 2). Studies have shown that while violent dating behavior typically begins when youth are in ages of 12–18, it often continues into adulthood [11]. Furthermore, while boys and girls are victimized by dating partners at fairly similar rates, boys tend to use physical forms of abuse that do greater bodily damage, whereas girls are more likely to use emotional and verbal forms [12]. Given the fact that both males and females are perpetrators, programs about dating and domestic violence on campus must address these gender dynamics. College students are at particular risk for experiencing abusive relationships. Leonard, Quigley, and Collins [13] found that 30–40% of college students had experienced some type of abuse from a dating partner. The 2006 International Dating Violence Study involving 9549 students from 36 universities in 19 nations found high rates of both minor and major assault perpetrated by men and women alike [4]. Some 43% of dating college women report experiencing violent and abusive dating behaviors, with 16% reporting sexual abuse by a dating partner [14]. More than half (57%) of college students who report experiencing an

abusive dating relationship say it happened during their college years [15]. Abuse also occurs in same-sex relationships at similar rates, and again, college students are particularly at risk [16]. Further, abuse on college campuses remains seriously under reported, with an estimated 5% of incidents reported to authorities [6].

Several factors increase the risk that someone will be involved in an abusive relationship, either as an abuser or as a perpetrator. Experiencing abuse as a child, teen use of alcohol and marijuana, early sexual activity, and involvement in a prior abusive relationship are all risk factors to experience abuse [17, 18]. Women who are in collegiate sororities are at greater risk for experiencing dating violence, in part because they often date men who are in fraternities. Alcohol is often involved in sorority and fraternity parties and is correlated with dating violence (see for example [19]). First-year students are at greatest risk of experiencing abusive relationships, as they are away from home and their normal support networks, and often new to intimate relationships [20]. The strain of college life has also been shown to increase the likelihood of abuse, in particular among students involved in longer relationships [21].

Similarly, there are several factors that are predictive for perpetrators. Gender, holding more positive attitudes toward the use of aggression (both in general and in relationships), exposure to childhood violence, anger, anxiety, depression, alcohol and drug abuse, sexual risk-taking, frequent dating relationships, and academic disengagement have all been identified as factors [22]. Certain collegiate men are at greater risk of being abusers [19, 23]. Male athletes, particularly those in what are called the “power and performance” sports, football, basketball, hockey, wrestling and boxing, are more likely to abuse their partners [23–27]. Men, who are involved with fraternities, as was noted, are also at greater risk for perpetration [19].

The scope of this problem clearly demonstrates the importance of educational programming to change beliefs and thus, hopefully, behaviors. Primary prevention programs are essential. Knowledge networks [15] reported that the majority of college students do not know how to identify dating violence, and 70% of college students who reported being in an abusive relationship say they were not aware it was abusive at the time. There are significant differences between males and females in terms of attitudes toward abuse, belief in misconceptions, and attribution of blame toward victims [28, 29], and younger college students appear more accepting of myths about abuse [29]. Primary prevention efforts “aim to circumvent violence in dating relationship before it occurs, often through either targeting the entire population within a school or utilizing data with regard to risk markers to present prevention programs to those individuals most likely to later become involved in violent intimate relationships” ([30], p. 366). Since most instances of dating violence are witnessed by or at least known by others, educational efforts must also target bystanders. Knowledge networks [15] reported that most college students do not know how to help a friend who is experiencing an abusive relationship. Primary prevention focuses on challenging gender-role norms and highlighting the social, political, cultural, and economic factors that underlie abuse [31]. Both the Centers for Disease Control (CDC) and the World Health Organization (WHO) emphasize that prevention programs should help draw connections between abuse and traditional gender role norms. As educational institutions, campuses should, ideally, be well situated to create primary prevention initiatives [32].

Many campuses remain ill equipped to address the scope, extent, and complexity of abuse [8, 33]. They still lack adequate policies, do not have ample resources for victims, and have weak, if nonexistent, prevention programming [3]. Whether it comes up in coursework is random, as students in certain majors—sociology, criminology, psychology, and social work, for instance—may learn about domestic and dating violence, students studying other areas are likely not exposed. Furthermore, most professors are not actively involved in advocacy or activism around issues of

abuse; hence, they can only address such topics from an academic perspective, rather than from experience working with victims or in prevention [8, 34–36]. As such, these issues are often presented using passive learning methods, or what Eisler [37] called dominator methodologies, which often bore students and fail to inspire them. Dominator methodologies typically involve the professor lecturing to students who are passive recipients of the information. In particular, these teaching strategies typically fail to leave participants with a sense that they can be leaders in the effort to end abuse [6]. Many universities address domestic and dating violence outside of the curriculum, often through one-time events featuring speakers or films. Although these are surely welcome, they are limited in their ability to reach students, not least of which is related to the voluntary nature of attendance. Oftentimes, these co-curricular events or activities reinforce victim blaming, as they focus on teaching women how “not” to be victims [38]. In essence, these efforts see the problem of domestic or dating violence as one of individual women and their relationships, not about gender role norms or social structures that reinforce violence as a means of solving problems and promote aggressive hypermasculinity [39–41].

One of the biggest issues relative to this concern is the role of men in the anti-domestic and dating violence movement. Research has clearly documented the importance of recognizing that both females and males can be victims of abuse, and of involving males as partners in the efforts to end domestic and dating violence [25, 26, 42–44]. Yet still many men believe abuse is a problem for only women, and while they may be sympathetic, they often do not get involved. Others may want to be involved but do not feel invited or welcomed. Casey [42] noted the importance of getting dominant groups involved in efforts to end social injustices. Casey and Smith [45] interviewed 27 men who were recently involved in some type of activism against gender-based violence. Participants responded to posts on Listservs and invitations to meetings of activist groups. They were of ages 27–72, and all but one was white. Casey found that men who wanted to be involved in domestic violence advocacy found it difficult to gain access, which they did primarily through personal connections. Nonpersonalized approaches is often the biggest barrier to male involvement, as men report that generic flyers and marketing materials are not inviting, and men see these injustices as “women’s issues.” College men also report they connect with certain speakers more than others, with many saying they rejected antiviolence activists for being too “liberal” and “soft.” A significant portion of respondents also disavowed overtly feminist messages, and most reported that negative messaging seemed to blame men for abuse and was off-putting.

In sum, men are more likely to be involved if they have personal experience with this type of violence [45, 46], if their peers are involved [46], if they have developed a social justice consciousness [47], and are invited to participate in a way that showcases precisely the importance of their contributions [45].

Many efforts to engage males rely on a bystander approach, which has shown great promise but has limitations. Carlson [48] interviewed 20 college-aged men (ages 18–19) who responded to questions regarding the degree to which they would be willing to do so after reading a variety of vignettes about women being attacked. The majority of the participants said they were hesitant to intervene, but were also very concerned about feeling or looking weak in front of other males if they did not intervene. These men showed conflicting attitudes about assisting a victim; they considered the traits of compassion and passivity weak but also indecisiveness, and they associated all traits with females. They also said they would be most likely to intervene physically, rather than verbally, but doing so would be contingent on their size and stature relevant to the assailing individual. Importantly, most respondents indicated their likelihood of getting involved was dependent on the degree to which they believed the victim had encouraged or “brought on” the attack. These

men seemed to hold many traditional gender role stereotypes that influenced their responses. Bystander intervention approaches, then, must also address these attitudes and beliefs but in a way that does not seem to be threatening to men [25–27, 43].

Another possible tool for engaging men and boys in discussion and action related to domestic violence is experiential learning. In response to calls from academics like Boyer [49], college campuses have increasingly utilized a variety of methods of experiential learning, both inside and outside of the classroom. Boyer [49] noted the importance of “scholars who not only skillfully explore the frontiers of knowledge, but also integrate ideas, connect thought to action, and inspire students. The aim of education is not only to prepare students for productive careers, but also to enable them to live lives of dignity and purpose” (p. A48). Although experiential learning takes many forms, one of the most popular is service-learning. Service-learning is an educational approach that asks students to complete service with a community partner that is intended to benefit all three groups involved—the community, the students, and the university. Some assert that an important part of service-learning is to create new ways of viewing the world, as it is intended to allow students to see the importance of taking action while also furthering their academic understanding [50, 51].

Research has shown a number of positive effects of service-learning for students [52–56]. It has been shown to improve the development of personal skills, increase self-worth, improve spiritual and moral development, enhance a sense of personal identity, improve interpersonal skills, better the ability to communicate with others, enhance cultural understanding, and increase leadership abilities [54, 55]. Studies with students show that most enjoy service-learning projects and that the projects enhance their interest in college, their courses, and learning in general, as well as improve their connections to faculty members, all of which increase the likelihood that they will persist toward graduation ([52], [55–59]). Service-learning also helps students find peers with similar interests, thereby reducing feelings of isolation [59, 60].

There are a number of concerns students may have about service-learning. Many say that time constraints make service difficult, and that transportation to service sites can be an issue [61]. Students sometimes complain about working in groups with other students who do not put in as much time, and some say that feel as though they are being used as unpaid labor [62, 63]. Furthermore, there is a tendency for service-learning to emphasize direct action more than social change initiatives. Gent [64] noted that less than 1% of service-learning projects are related to civic action or justice advocacy, and thus they may have more of a “band aid” effect than a transformative one [65].

Service-learning is beneficial to community organizations. The work students do with a group or agency helps meet a community need and can improve community-campus relationships. Nonprofit organizations, for instance, are often short-staffed, so having students there to assist can take the load off of employees. Yet there is also concern that students can be a burden, as they come and go frequently in what has been referred to as the “drive-by” model of service [66]. Furthermore, sometimes students who engage in service with oppressed or marginalized populations may see themselves as “liberal saviors” and, as such the service may actually reinforce existing perceptions [67].

One concern that has yet to be fully explored is gender differences in service. One study found that there are gender differences in volunteerism in general, with women 30% more likely to volunteer in their community than men [68]. The type of volunteerism varies by gender, as well. Women are more likely to volunteer with educational institutions and health-related organizations, while men are more likely to volunteer with civic organizations, sport groups, and public safety

initiatives [69]. Female college students also tend to volunteer more and are more likely to engage in other forms of service-learning like study abroad programs. These gender differences tend to become evident early on, usually during a student's first year of college, with female first-year students being more likely to volunteer in the community than their male counterparts [70].

Existing studies show that women are more likely to participate in a broad range of service-learning programs compared to men [55, 71]. Rykov and Taylor [63] found that females were over-represented in service-learning courses, and that females reported engaging in service-learning as more valuable, more exciting, more empowering, more impactful on their educational choices and career paths, and more useful for their social and professional development than did their male peers. Males frequently noted that service opportunities were not appealing to them; they wanted more service related to traditionally male-dominated fields, including math, science, politics, economics, research methods, kinesiology, and physical education [63].

The explanations for the gender gap in service-learning tend to focus on gender roles. Men have traditionally been expected to focus their attention on being "bread-winners," so paid employment is an important goal. Furthermore, recruiting materials for organizations seeking volunteers may be more directed to and therefore appealing to women, and many agencies seeking volunteers or students to serve are female dominated [39].

The following section describes a service-learning project designed to raise awareness about dating and domestic violence. It emphasizes efforts made to engage men and boys in the initiative.

3. The College Brides Walk, difficult discussions, and experiential learning

The College Brides Walk (CBW) was created in 2011 to raise awareness about dating and domestic violence. The idea was initiated when Josie Ashton, a South Florida activist, organized the first Brides March after she heard about the brutal murder of Gladys Ricart on September 26, 1999. Gladys Ricart was a Dominican woman who was killed in New Jersey by an abusive ex-boyfriend. The perpetrator, Agustin Garcia, gunned her down in front of her family as she posed in her wedding gown for photos of her wedding to another man that was supposed to take place that day. After obtaining permission from the Ricart family to walk in Gladys Ricart's memory, Ashton donned her own wedding dress and walked from the New Jersey home where Ricart was killed to Miami, Florida. Along the way, she stayed in 14 domestic violence shelters and visited 22 cities. Her trip has inspired annual Brides Marches in New York, Wisconsin, Washington, DC, and now Florida and the Dominican Republic. The idea is that the highly visible "spectacle" of people walking in wedding apparel prompts media attention and public dialog about this issue that is often still considered too taboo to discuss.

Given that many college students would not be able to attend such an event if it was held off campus, the organizers decided to host CBW on the campus of Barry University. The idea was to make it about more than just one campus, so outreach was conducted to other area campuses and groups. Rather than just a walk, organizers determined it was important to include additional educational opportunities. On February 11, 2011, the first CBW featured not just a walk but opening and closing speakers. Each year the co-organizers have met to assess how the event went, and have used input from student and community participants to make improvements. Elements have been added to the day, and the initiative has expanded to include

presentations to local school groups throughout the year and other programming on Barry's campus and on the partner campuses. By year 8, CBW had grown to reach more than 1200 people on the day of the event as well as thousands before and after through educational outreach. CBW now partners with seven areas colleges and universities as well as many clubs and organizations on campus and groups in the community. It now not only includes the walk and speakers but also workshops for high school and college students who choose not to walk, as well as passive programs that participants can sign, arts activities, and signs that share the stories of people who have been killed by domestic violence.

In addition to simply raising awareness about abuse, the goal of CBW is to correct misconceptions about dating and domestic violence. Furthermore, CBW aims to acknowledge the diversity of victims, the dynamics of abusive relationships, and explore why abuse happens. As such, many of the activities before and during CBW focus on the role of gender norms and patriarchy. CBW is intended to inspire students to get involved not only if they see or hear about abuse but in efforts to transform society so as to reduce or eliminate abuse. In order to achieve these goals, CBW must include both females and males.

Since 2009, students in Perspective Consciousness and Social Justice (SOC 200), Introduction to Theology (THE 201) and several other courses have been allowed to participate in CBW to earn the service hours required for course completion. At the conclusion of the service, these students are required to write a reflective paper to discuss their experience and to show how it connects to course content.

4. Using the CBW for social justice service-learning

Students in the above-listed courses are allowed to complete their required 10 hours of service-learning by assisting with and participating in CBW. SOC 200 is a required course for students whose majors are in the College of Arts and Sciences. The content of the course focuses on critiquing social systems, structures and institutions regarding inequalities. SOC 200 emphasizes the ways that inequality and injustices are structured into everyday life and provides students with a better understanding of activism to promote social justice. A significant part of the course focuses on gender inequalities. Similarly, THE 201 is a required general education course that emphasizes the role that many faiths play in the creation of a more socially just society, in regard to gender and other issues.

Students can accumulate 10 hours by providing assistance in advance of the event as well as on the day of the event. Before the event, students help to create banners and decorations highlighting statistics and catchy phrases related to identifying, responding to, and preventing abuse. Some students work in groups to research specific aspects of abuse and then create informative poster boards displayed at the event. Students also help to create public service announcements that are shown at the event and used during outreach sessions to local elementary, middle, and high school classes. With a trained adult, several college students go to community groups and schools to talk to young people about abuse and to engage them in artistic activities and reflective activities to enhance their knowledge about the topic. These groups are invited to participate in the event and they often do, either by attending or preparing PSAs or materials that can be used in it.

On the day of the event, students earn service hours by helping set up and clean up, assisting local organizations that are tabling at the event, promoting the event on campus, and participating in the walk. All are required to listen to the speakers before and after the event to hear the voices of victims. After the event, all service-learning students participate in a debriefing session in order to better understand

the ways that the issues of domestic and dating violence and their actual service with CBW advance the university's mission and core commitments and how they connect to course material.

5. Engaging men in the CBW

One of the most challenging issues in making sure this event successful is ensuring it is not a female-dominated initiative. Connections with women's mentoring organizations bring many female attendees, but organizers have not yet secured a similar relationship with a largely male group. Feedback from evaluations has informed us that males who participate value it greatly and want to see more male presence.

The coupling of this initiative with the service-learning requirement for SOC 200 and other courses has been helpful. Although the initiative itself attracts students who need to complete their service hours, part of the appeal is that it is on campus and the hours can occur over 1 week, thus students without transportation or with challenging schedules find it user-friendly. This includes a number of males. If they initially participated for the hours only, most service learners, including the males, describe in their reflection papers how rewarding the experience was [61].

Many service learners return in subsequent years, even though participation is no longer required. Kevin (a student whose name is changed to protect his identity) started in year 1 as a service learner. The event hit close to home, as his mother was nearly killed by an abuser. Not only did Kevin participate the next year but in the 2 years after that he helped his mother fly to South Florida from Chicago so she, too, could participate.

Another way CBW has worked to involve men and boys is through active outreach on Barry's campus to male-only or male-dominated organizations. Barry has only one fraternity, but CBW has generally had their involvement. There is a club called Men Achieving Leadership Excellence and Success (M.A.L.E.S) that partners with CBW every year as well. CBW has also attempted, although less successfully, to engage athletes, both male and female. Presentations to coaches meetings have found them to be generally supportive, but travel schedules and other variables seem to get in the way of extensive athletic involvement. A few athletes participate each year, but largely because they are taking a service-learning course, not so much because they are athletes. CBW organizers do believe that outreach to fraternities and athletes is very important, given the extensive research showing these groups are over-represented as abusers and as sexual assailants, and in some cases, as victims [24, 25, 72-75].

Another tactic that has been effective has been to employ the males that have already been engaged to reach out to their peers. This helps break down the idea that it is a "female" program, and lets these engaged males use the tactics they feel are most appropriate to involve other males. As an organizing team of almost all women, CBW organizers know that it is not the best equipped at understanding what messaging that is most effective to and for a male audience. Men like Kevin, noted above, help bring dozens of males to the event each year. Similarly, organizers at the other campuses have done the same, with some success. In the past 4 years, orientations have been held for students seeking to earn service hours with CBW. During these sessions, organizers discuss the event, the scope, extent and dynamics of abuse, as well as gender role norms and patriarchy.

Organizers have also reached out to male faculty and staff members, asking for their support for the event. Most have been tremendous, and some even walk or otherwise attend. Others simply present it to their classes, or allow us to come present to them, so we can invite the participation of both men and women.

These sessions often include showing of a TED talk by Jackson Katz [76] or Michael Kimmel [77] in which they highlight the ways that men can help and showcase how ending abuse, and promoting gender equality, is good for both women and men. As has been previously written, faculty and staff play an important role in helping to end abuse and assault on campuses [32]. Providing introductory sessions for classes has also helped reach males on campus. In these sessions, organizers review the basic scope, extent, and dynamics of abuse and show how it connects to course content. Male students have reported that these classroom sessions are integral in their understanding of how gender inequality in general affects both females and males.

Additionally, CBW organizers have tried to diversify the ways that male students can participate. Knowing that some may not want to engage in the spectacle of the walk, organizers come up with a variety of research and preparatory tasks that may appeal.

Furthermore, the CBW team has researched and reached out to organizations of men in the area, again, with limited success. Although this is an excellent tactic, it is challenging “cold-calling” without a personal connection to an organization, but it has worked with several school groups and a few community organizations. One group that has supported the College Brides Walk financially and with people-power since it began is Amnesty International.

Asking community partners for help with engaging males is another tactic that organizers have employed. The nonprofit organizations with which CBW organizers work, often have access to male volunteers so they have been helpful in this regard.

Ensuring that the programming elevates male voices has been another tactic. The event always features a male speaker, whether it is a survivor, activist, performer, police officer, or a male in another role. Additionally, each year, some element of bystander intervention is included in the training, whether it is a workshop, via a speaker, or through video clips. Organizers also utilizing the literature ensure that the initiative tackles hegemonic masculinity, but in a way that is not threatening or blaming.

Finally, CBW organizers have worked hard to engage local media to promote the event. Barry University always issues a press release, and all the organizers reach out to any media contacts we have. In these interviews or spots, the importance of male involvement is highlighted. The CBW team has been fortunate to receive great press coverage each year, which not only promotes the event, but can also help debunk the idea that this is “women’s work.”

6. Conclusion

In sum, CBW has been a labor of love for the organizers. The team constantly seeks to improve its efforts, and one of the topics that most frequently comes up is the continued need to engage more men and boys. While organizers are proud of the efforts that have made, there is room for improvement in regard to reaching men and boys not only academically, but also emotionally. One thing being planned for the ninth Annual College Brides Walk is more involvement of law enforcement. CBW organizers have been fortunate to have police officers volunteer their time to support the walkers in safely navigating the roads, but given the research that indicates males are more likely to get involved with criminal justice-related efforts, this could attract more men and boys to our initiative. Furthermore, given research about abuse in the LGBT community, continued outreach to organizations in schools, like Gay Straight Alliances (GSAs), or on campuses, like Barry’s PRIDE, and in the community, like Human Rights First, might also help attract committed males. As Katz [76] says in his TED talk, “Violence against women—it’s a men’s issue.”


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The Clash of Cultures: Digerati and Devolution in the Twenty-First Century

Karen Stephenson

Abstract

For over two decades, evolving digital platforms have connected human societies and nations enabling the rapid diffusion of information in patterns mimicking starling murmuration. Despite technological prowess, the digerati of the twenty-first century (Gens X, Y, Z), can be both informed and fooled by well-placed memes. Take a lesson from scientists Henri Milne-Edwards and Emile Durkheim in the 1800s. Their world of connection was nascent. Yet, they grappled with similar issues regarding the intended and unintended consequences of the interrelationship between the size and complexity of connection. For Milne-Edwards, he focused on the size and complexity of organisms later influencing Darwin and Durkheim. As for Durkheim, he examined society and its divisions of labor and the unintended consequence of social isolation and suicide. The malady of the infinite, as Durkheim labeled the socially disengaged, dealt with societal segmentation and isolation of individuals. This commentary addresses the elementary network structures of societal segmentation. Today's digital society is wildly connected as never before, and yet, the social ills of isolationism linger. Regardless of the ubiquitous connection, individuals are wantonly socially isolated. It is further suggested here that passively monitoring digitized data, such as that being explored and tested in China, may provide a viable, implementable and corrective course for isolationism.

Keywords: social networks, social media, anomie, organization, trust, trust index

1. Introduction

This chapter provides an anthropological¹ commentary for the malady of the infinite. It examines the multidimensionality of the digital and physical worlds and how this might enable a rise in the manifestations of social isolationism. The impact of massive human social connection is overwhelming given the *virtualization* of human relations through social media. This technological change has produced a type of viral connectivity akin to starling murmuration. Pass a toxic meme to a social media influencer and one can co-create contagion and conflict. One hundred years ago, Durkheim straddled the 1800s and 1900s, writing about the woes of social isolation in the midst of European industrialization. He called it anomie, or a malady of the infinite. Another century later, as the Industrial Revolution recedes in

¹ Dr. Stephenson was a quantum chemist before classically trained at Harvard University in Anthropology.

the rear-view; a brave new world of digital and virtual connection swallows whole societies and nations.

What are the societal symptoms of individuals having too many, not too few, connections? Are they more connected or increasingly isolated? Big data and grandiose computational schemes point researchers in the direction of scale or size. Yet, the basic elementary forms of network structure persist, such that the size of economies and connections are subject to only a few small structures [1]. Thus, while the size of connectedness has increased exponentially, the science itself remains unchanged. What has changed is how we track connection and its obverse: isolation [2].

2. One is the loneliest number

In *The Division of Labor* [2] Durkheim advanced the notion of “anomie” as a response to industrialization—a transition from bucolic organic solidarity to the mechanical solidarity of mass-regimentation. Later in *Suicide* [3], he characterized anomie as the result of a rapid change in the standards or values of societies accompanied by a feeling of alienation and purposelessness. He believed that anomie is common when society undergoes significant economic or technological change. He was caught up in the middle of European industrialization. Durkheim envisioned a world of laterally connected groups and individuals. Was he prescient?

Preceding Durkheim, our human forbearers approximated virtual connection by crudely connecting via “tom-tom” or birdcall, staccato missives traveling through airwaves to distant relations. Today in the twenty-first century, staccato texts and tweets are tapped out finding their targets seconds after “send.” At present humans appear to be insatiably engaged in the experience of connecting such that “down time” from screen time is calculated in a person’s daily routine.

Maybe Durkheim could not foresee the digitization of personal information, but he could have foretold the story of the single student facing an army tank in Tiananmen Square in 1989. That image was sent around the world through a twentieth century fax. Two decades later, the revolution in Tahrir Square set off the Arab Spring and was emblazoned in the Twittershpere. These two iconic examples remind the reader that humans, in any age, whether prehistoric, industrialized or now, can be compressed into cultural memes and telegraphed as avatars in a Disneyesque world of virtualization. I suggest Durkheim’s phrase “malady of the infinite” is indeed a proper *nom de guerre* for this maturing virtual reality age. Cyber-bullying, hoaxes and virtual mobs are the unintended consequences of anomie in this time.

3. Two can be as bad as one

Implicit in the phrase “malady of the infinite” is the notion of how messages through technology can be scaled [1], that is, countless connections occurring 24/7. Waves of millions of texts and tweets mimic starlings in full murmuration. While beautiful to watch, how does one contain such a force of nature? Collecting 500 friends on Facebook doesn’t imply they show up when summoned. Having millions of followers means what?

Chattering exuberance can be transformed into deadly swarming behavior striking down a human—a daily occurrence as parents sift through digital debris to source a cruel cyber-bullying attack on their child. Waves of scandals dismiss reputations and careers. A mean meme can be propagated in the twinkling of an eye.

But mean memes have their antecedents in tribal culture. Anthropologists were frequently made the butt of jokes by less educated, but no less clever tribal elders. For example, the nineteenth century anthropologist Rivers [4] was sent on a hopeless pursuit by his tribal informant to trace the kinship of a clan member only to discover that it was all a ruse. Individuals in the clan didn't care if they were biologically related. That was a construct of the anthropologist. If it was inconvenient, they simply "made up" meaning to fit a political narrative. That's when Rivers realized the joke was on him. His lesson? A fictional familial relationship is just as credible [4] as a biological one.

This example of familial connectedness can be mathematically expressed. In any epoch there are "trusted" brokers of communication, and there is a calculus to their connection. For example, it takes a minimum of two people to make a trusted link. These two-person links undergird most assumptions about market economies, commerce, personal relationships, contract law and family structures. Bi-lateral contracts oversee the exchange of goods, services and information and can be traced to the binding force of reciprocity [5] that exists even in the most esoteric of "restricted" marriage exchanges [6] among wealthy classes or castes.

However, two-person links are fundamentally unstable over time. *Leverage* is all but impossible as information is simply parried back and forth like a tennis ball. If one person is betrayed, well then, the game is over. One becomes the loneliest number. Real leverage is when two-person links are brokered by a third person. To paraphrase Levi-Strauss [7] it is more important when a two-person household becomes a three-person household (or triad) than when there is a 10% increase in a population of 300 million. In other words, size is tempered by structure. The scientific rules of size, weight and structure [1] hold.

4. The triad: an atom of organization

At the turn of twentieth century, grand theories were being proposed in the sciences, linguistics and anthropology. At that time, Claude Levi-Strauss proposed a general theory of kinship, a DNA underlying the kinship patterns in all societies. Unfortunately, he never discovered it because his focus was on biological lineage, not social connection. As mentioned earlier, most societies finesse familial (biological) with familiar (and sometimes the altogether fictional) to gain political advantage. So if there were to be an atom of organization, perhaps it was a hybrid of these types of connection.

Triads are the most elemental of connections in crystalline structures, hydrocarbons and in humans. Under a microscope, triads are wobbly structures, both in carbon-based molecules as well as in human groups. In carbon-based structures they are held together by covalent bonds. Human structures are held together by valences of trust—the weaker the trust, the greater the uncertainty. The greater the uncertainty, the more people will *increase* their social ties to mitigate the risk [8].

In a triad there are three links and three nodes (or individuals). One individual is directly connected to the other two making the third connection an "indirect" link. The indirect link is present in every triad and this mathematical operation suggests that not every node or path is equivalent to each other. It is precisely this asymmetrical quality that makes triads wobbly. Were one to map a triadic structure onto human scenarios, this would look familiar: betrayals, love triangles or a child *playing* one parent against the other. History books are sprinkled with stories of toppled empires, which when mapped, point to the indirect link in a triadic structure as the culprit [9]. It is the indirect link that is

the source of this uncertainty. An indirect link and its associated risk is difficult to identify, although it is generally sensed by humans [1] prompting them to mitigate the risk by increasing the number of their contacts—the 500 friends on Facebook or the million followers on Instagram. The virtual world is the ideal petri dish to grow, observe and measure these occurrences. While social media has enabled this wobbliness, computational power and mathematics can help us understand it (a matter to which we will return).

5. We connect, therefore we trust

To say “I know of you but you don’t know me” is a connection that is a one-way connection or directed graph. To say, “I know you and you know me” is an undirected graph, or two way connection. The reality is that when people do know each other, they are likely to reciprocate or exchange favors, messages, etc. This reciprocity is critical to forming trust—the who, the when, the what and the where is part of the calculus of exchange that exerts a governing logic over people exchanging with each other. Bourdieu called this calculus “habitus” [10]; Mauss called it the “hau” or spirit of the gift [11]. Multiply these exchanges over enough people over a period of time and trust develops, a binding force that keeps people connected to each other [12–14].

Low levels of trust infuse most exchanges. Despite trace levels, trust can have a moderating effect on uncertainty. That is why the first message to be believed generally comes from a trusted source, not from an authority figure. So if a person is a member of a professional group, social club or work group, then that person more or less trusts the information he or she hears from colleagues because it is too time-consuming to second-guess every message. An abundance of historical evidence [9, 13] indicates that empire-ending and life-chilling moments have been sourced to a trusted connection gone awry. That’s why cabals, cartels, cults, mafia, mystery, and mob rule are effective in curbing and controlling behavior.

Trusting in trust can be so strong as to cause social cohesion, a benchmark of culture. Cohesion, or culture in general, can lead to significant behavioral changes and the abandonment of personal values. Once the process of trusting has begun, it infects the entire social network of the group. This network *maturation* is marked by a hardening of the edges in the service of establishing group boundaries. Ranks close and barriers to entry rise higher: “You don’t look like us, you don’t walk and talk like us, you don’t think like us, you are not a part of our network.” There’s always a trade-off in these distinctions: conformity over risk; belonging over nomadism or isolationism. How to behave, who to trust, and, what to value influence how we see ourselves [15–19]. Herd mentality and groupthink result from unchecked conformity [20].

Trust is the medium to bring people together and once together group norms and conformity ensue. Therefore, if one is not a part of the group—an isolate—it is a lonely existence. With the advent of social media, cyber-bullying and more conventional bullying on the school grounds often results in the isolated individual recruited through the dark net or, tragically lashing out in violence. The recent spate of school shootings in the United States and worldwide correlates with isolationism brought on by familial abuse, drug abuse, radicalism or bullying. On post-mortem reflection, neighbors, students and families express incredulity that someone they thought they knew could have been so misled or misguided. One reason for being blind-sided is that people cannot correctly interpret warning signs and signals. What is needed is an objective perspective.

6. Discussion on trust

One way to approximate social cohesion is to passively monitor social connections through personal trace data made possible through social media. From this abundant data, algorithms for trust are being created in much the same way credit scores are now calculated for consumers. A trust profile, sometimes called a social capital index, has been developed in a few countries but it is still not broadly implemented. Nevertheless, the three generally accepted indices of finance, credit and health might soon add a fourth to their ranks. This was foreseen centuries before.

As early as the 1700's, social theorist Jeremy Bentham [21] put forth the notion that an architectural panopticon could help right society's wrongs through social observation and monitoring. He relied upon a "line of sight." Bentham's influence was re-envisioned by Foucault a century later into a knowledge architecture [22]. Foucault was less concerned about the physical architecture and more concerned about the architecture of power—disciplinary techniques used to deconstruct the individual and reconstruct him or her in the image of the institution. These ideas formed the foundation of early management theory. They presaged ubiquitous technological surveillance in the twenty-first century.

Industrialization marked a turning point in how humans interacted with machines. Initially tethered, humans mobilized and then digitized information and ultimately themselves. This turning point led to a tipping point whereby virality has disrupted the primordial territorial imperative. Oligarchies are passé. Ochlocracies² are fashionable. This is the world of the instantaneous: where information and entities mobilize, intimidate and disrupt the status quo. People conflate trust with technology and this has overridden caution. Now it is possible to passively track digital data exchange between people through social media platforms. This is why economists are actively researching the quantification of trust. The Chinese government accepted this challenge and has implemented a social credit system and national trust score for its citizens. The supporting data comes from social media activities based on location, friends, health records, insurance, private messages, financial position, gaming duration, smart home statistics, preferred newspapers, shopping history, and dating behavior. In 2020, the behavior of every legal person in China will be rated and ranked, whether they want it or not. One stated reason for this new trust index was to avoid the distrust and social isolation experienced by many Chinese during their cultural revolution.

Western nations watch. If there had been regular monitoring preceding 9/11, could the United States have intercepted the terrorists in 2001? A similar question could be raised for fraud networks or polling in political campaigns. The data collecting behemoths of Google, Facebook and Twitter have been covertly monitoring the consumers of their services for years. They are focused on financial capital. But who is focused on social capital [23–24]?

7. Conclusion

I introduced the chapter as commentary. I have suspected virtualization gives us the freedom to fly high in magnificent murmuration where humans give each other a hand up through crowd sourcing. But this brave new world also extrudes hate-crime hoaxes, cyber-bullying and victimhood chic. While I have my concerns about the unintended consequences of the China social credit syndrome, I agree with the

² Ochlocracy is mob rule or the rule of government by a mob or mass of people.

justification for its existence. Perhaps we would do well to watch China and learn from its policy, as China has most certainly learned from the Western world's lack of one.


I remember Durkheim's lament about the malady of the infinite. It gave him pause and cause enough to write about anomie—the social isolation resulting from agrarian villagers migrating to industrialized ghettos. I wonder if he wasn't pre-scient about our own time. We may be flying high in virtual connectivity but are we meaningfully engaged when we at last alight on the earth? *One* may be the loneliest number but so it can be said of millions more.

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Section 3

Clinical Perspective of
Social Isolation

Deprivation of Social Play: Implications for the Mechanisms of Autism Spectrum Disorders

Huyen Thi Ngoc Tran and F. Scott Hall

Abstract

Social play emerges in early adolescence and is one of the primary types of social interaction seen early in life in mammals. The experience of social play is essential for the normal trajectory of social and cognitive development. Adolescent mammals deprived opportunities for social interaction at this age display neurodevelopmental abnormalities. Social deprivation alters adult behavioral patterns, neuroanatomy, and neurochemistry in ways that resemble autism spectrum disorder (ASD). These deficits include impairments in communication, social perception, and social behavior. However, the symptom most characteristic of the earliest stage of ASD is decreased interest in social objects. Understanding the role of early social experience, especially play, in the development of social, cognitive, and emotional functioning will provide insight into the development of ASD. In order to understand how social deprivation can affect behavior, researchers isolate animals during early adolescence. Most studies have looked at rodents since it appears that isolation-rearing of rodents has detrimental effects on social development, making it a valid model of ASD. This chapter will consider the potential of this model as a model of ASD, and how it can inform understanding of ASD and the neurodevelopmental mechanisms altered by reduced social interactions early in life.

Keywords: social isolation, autism spectrum disorder, play, ultrasonic vocalization

1. Introduction

Animal models provide a means to study behavioral and psychiatric disorders that can reveal underlying mechanisms that we are unable to address in studies in human subjects. The genetic, anatomical, biological, and behavioral characteristics of rodents (primarily rats and mice) closely resembles those of humans, making them a powerful tool for modeling psychiatric diseases [1], providing a means to examine underlying processes, as well as to test potential therapeutic approaches. Like many other conditions, attempts to develop animal models have been pursued for ASD, including those based on environmental factors such as maternal immune activation [2], as well as genetic variation [3]. The similarity between the behavioral sequelae of different types of deprivation of early social experience were long ago compared to ASD [4]. Deprivation of early social interactions, often including deprivation throughout many portions of early development resulted in impaired social and emotional functioning, and repetitive, stereotyped behavior. Over time, experimental studies that deprived animals of specific types of social experience

suggested that different outcomes result from deprivation of different types of experiences at different ages [5], indicating that specific neurodevelopmental programs produce different biological and behavior phenotypes through epigenetic programming [6, 7]. In terms of understanding ASD, this suggests that genetic contributions to ASD may act, at least in part, by altering how these epigenetic programs interact with their mediators, while experiential and environmental contributions to ASD may affect those mediators. In either case, a great deal of insight might be drawn from identifying those mediators.

Play is a behavior found throughout much of the animal kingdom [8], but differs in prevalence and complexity across lineages and even between more closely related species. Descriptions and conceptualizations of play have emphasized its apparent non-utilitarian nature, and it has often been difficult to define, but this description captures its essence: “Play is repeated, seemingly non-functional behavior differing from more adaptive versions structurally, contextually, or developmentally, and initiated when the animal is in a relaxed, unstimulating, or low stress setting” [9]. Play has been broadly divided into three types: (1) solitary locomotor-rotational play, (2) object play, and (3) social play [10]. Perhaps not surprisingly, social play is most prominent and characteristic of mammals. Social play is often described as “rough-and-tumble” play, describing the physical nature of the interactions, although there are certainly other aspects of social play that are not fully captured by this description. A key point regarding definitions of play regard its seemingly non-utilitarian nature. It is in fact thought to have a purpose, and many reasons for social play have been suggested [11], that include the development of faculties necessary for successful adult life, including aspects of communication, social cognition, and emotional regulation [12]. It even has been suggested to be important in developing a moral sense of fair play [13]. This characterization is based largely upon analysis of rough-and-tumble play, one of the main types of social play in young mammals, although other types of play might certainly contribute to the development of these faculties. It is impossible to miss the correspondence between these faculties (communication, social cognition and emotional regulation) and the sorts of deficits that are observed in individuals with ASD. On this basis alone it might be thought that play (or lack of play) might have a fundamental role in the development of ASD, perhaps due to basic alterations in social motivation in ASD [14]. It must be noted that ASD may be associated with alterations to both social and non-social rewards [15].

In emphasizing the non-utilitarian nature of play, a large portion of experience is ignored that is less apparent by simple direct observation, in particular emotional and cognitive experience. Social play has somewhat obvious purposes in terms of learning about social interaction and social perception, but play still has many distinctive features that are quite different from adult behavior. This would suggest that play is not simply a “rehearsal” for adult behaviors, although it may still set the stage, in many ways, for later behavior. Play is one of the earliest non-maternally focused social behaviors seen in animals, occurring at a time when the brain is more plastic than it subsequently is in adults. Consequently, in a broader sense, one of the main functions of play may be to guide and regulate neural and behavioral development. Play is most prevalent during the adolescent phase [8, 16], although it does continue in some manner or form into adulthood. Nonetheless, adolescent play would appear to have distinct purposes in adolescence, making the peak period of play in adolescence the ideal window to study the behavior. This review will focus on play during this period, but it should be noted that once sexual maturity is reached, play behavior may be used for different purposes and is not completely absent [8, 17]. Play of other types and at other points of the lifespan are certainly important to study as well. Several reasons have been stated for the focus in this

chapter on adolescent play, but others include the consequences of deprivation of play during this time-period, which are discussed in a subsequent section.

There are various methods used to study play in rodents, but most are based on observational measures of interactions between dyads of animals. A number of factors influence play behavior, both quantitatively and qualitatively, including age, sex, novelty of the actors, novelty of the environment, etc. Moreover, one of the factors that is used to increase the motivation to engage in social play, as well as the quantity of social play, is the immediate social circumstance of the animals [18]. Social isolation for 24 hours increases the intensity of social play, and the motivation to engage in social play, and for this purpose is commonly used to study social play. However, it may also change qualitative aspects of play as well. This will be discussed in a bit more detail in a subsequent section but suffice it to say that the extent of play that is observed in any particular encounter depends on a variety of factors that would subsequently affect the response to the play experience. There are also differences in play behavior between mice and rats. This chapter will focus on social play behavior in mice and the implications of play experiences for developmental disorders, specifically when mice are deprived of social interaction.

In considering the potential implications of adolescent play for the development of social, emotional and communicative faculties, it must be stated that most play studies have focused upon physical interactions between dyads. Other behaviors that may have great importance in the development of social communication have not been as extensively explored, including vocal communications. Mice communicate with one another through the use of ultrasonic vocalization (USV). The use of USV can vary depending on the behavioral context the animal is experiencing: mother-pup retrieval [19], juvenile interaction [20], as well as opposite sex [21] and same sex [22] social encounters, that also differ according to age and other characteristics of the actors. There has been an increase in interest in understanding role of USV because of its implication in communication in mice. In the context of the present discussion it should also be added that experience with USV as a part of social interactions early in life are likely to have important developmental consequences that affect social behavior, and social perception and communication abilities later in life. Although there have been several studies conducted on behavioral effects of social isolation, very little information is known regarding how USV is affected by social isolation. Examination of this means of communication as a part of studying adolescent social encounters can potentially allow researchers to characterize the purpose of calls, both in a proximate sense in terms of from the fact effects on ongoing behavior, as well as in an ultimate (i.e. neurodevelopmental) sense in terms of its influence on the development of social abilities and social competencies.

2. Autism overview

The perspective put forward in this chapter is that the study of play, and an understanding of the neurodevelopmental consequences of play experiences, will inform our understanding of ASD, and perhaps other neurodevelopmental disorders. The incidence of ASD has risen dramatically in the last few decades, no doubt in part due to increased diagnosis, due in part to changes in diagnostic criteria between DSM-IV-TR and DSM-5 [23], and perhaps over-diagnosis, but also truly increased incidence of the disorder based on a variety of environmental factors [24]. Among these environmental factors is *in utero* exposure to selective serotonin reuptake inhibitors (SSRIs) [25], which is also seen in animal models of hyperserotonemia [26]. Increasing concern about ASD comes it is one of the fastest growing developmental disorders affecting the ability to socialize and communicate, with

devastating effects that make many individuals unable to function in society on their own. According to the Center for Disease Control and Prevention (CDC), the disorder affects 1 in 59 children, with boys being four times more likely to develop ASD compared to girls [27]. Life-long disabilities in these patients significantly impacts several areas of functioning including communication, social interaction, social perception, emotional regulation and sensory processing, and individuals with ASD often exhibit repetitive, and sometimes self-injurious, behaviors [28]. Currently there is no pharmacological treatment that specifically targets the main symptoms of ASD, although individuals with ASD are often on a variety of medications to treat various secondary symptoms [29]. Primary treatment modalities include different types of psychological and occupational therapies [30]. These therapies could certainly be complemented by effective pharmacotherapies, but they are not yet available, and even approaches to identify potential treatments are in need of development. Part of the difficulty here is the complex causal web that underlies ASD, as well as the broad spectrum of symptom occurrence and severity that occur in individual patients. The factors contributing to ASD include environmental, genetic and gene-environment interactions [31], but each particular contribution appears to be small, particularly for genetic factors. Considerable efforts are now focused on understanding the genetic causes of autism and using the genetic findings to select rational targets for effective treatments [32–34]. As with other psychiatric disorders with a complex causality, there is some thought that understanding the genetic and environmental factors contributing to the development of ASD will lead to the identification of convergence of these factors on common systems. An alternative approach is to identify the systems underlying the neurodevelopmental processes upon which genetic and environmental variation may act. Therefore, there is a need to study the neurodevelopment of social behavior to better understand the shift in brain development in patients with ASD.

One of the longest-standing debates in the field of autism treatment involves when the disorder can be initially diagnosed. Although the age at diagnosis is generally between 3 and 6 years of age, diagnoses can be made under the age of 3 [35]. Autism diagnoses and symptoms are also highly stable over time, even from an early age [36]. Given the age of developmental emergence of the behavioral functions altered in ASD, it should be expected that certain symptoms might be observable very early in life. Infants show socialization skills, and more importantly social motivation, by gazing at faces, turning towards voices, and smiling within the first couple of months of age. Children with ASD have difficulty engaging in everyday social interactions even from this early age, and show deficits in the earliest aspects of social interaction such as eye gaze [37]. Lack of response to names, reduced interest in people, and delayed speech are some early symptoms of the disorder that are observable by as early as 8 to 10 months of age. People with ASD have difficulty interpreting what others are thinking and often miss social cues such as a smile, frown, or extending an arm for a hug. Social anxiety is also common, but to a certain extent social signals are just not understood by individuals with ASD. Being unable to interpret gestures and facial expressions makes it difficult for people with ASD to see things from another person's perspective, which in turn can interfere with the ability to predict or understand a person's actions. This difficulty with emotions is also characteristic of their own emotions. It is common for those with autism to have difficulty regulating their emotions, leading to disruptive and sometimes physically aggressive behavior. Speech and gestural communication are usually delayed in children with ASD and some have difficulty forming meaningful sentences and may speak only single words or repeat the same phrases. Slight changes can be stressful on the individual which may lead to outbursts. Evaluating these symptoms early on can help alleviate the challenges the individual faces

throughout their life. The symptoms described here represent a range of psychological and behavioral functions that emerge over the first few years of life, that build upon each other to form the basis of social interactions, the core of which involve the ability to understand and communicate with others. Part of the emphasis upon early diagnosis and treatment presumes that early intervention will produce better outcomes. One reason for this assumption is that interventions alter early life social experiences which shape later behavior, and behavioral capacity.

One of the fundamental reasons for the description of autism as a spectrum is that symptoms vary substantially between individuals in terms severity, but also qualitatively, as well as having highly variable co-morbidities. Given this variability in presentation it is not surprising that ASD cannot be explained by a single underlying cause, but rather has a highly multifactorial etiology [32, 38, 39]. Although the causes of autism are not completely clear, there is evidence that environmental factors before and after birth contribute to the risk of developing ASD, including advanced paternal and maternal age, maternal illness during pregnancy, extreme prematurity, low birth weight, and exposure to high levels of pesticide and air pollution during pregnancy [40]. However, these factors by themselves do not cause autism, but rather act in combination with genetic risks [41, 42], resulting in common underlying transcriptomic changes associated with alterations in neural function and connectivity [43]. Both the genetic and the environmental (epigenetic) contributions to ASD are numerous, but as an example childhood abuse alters methylation patterns in the brain associated with epigenetic changes regulating gene expression [44, 45]. Although much of the research on early childhood trauma focusses upon stress as a causal outcome of early trauma, there is much more evidence that adverse early environments alter neurodevelopmental mechanisms associated with social experiences [7]. Of most relevance to the current discussion, evidence from the study of social isolation in experimental animals suggests that there are two developmental trajectories, one associated with social experience and one associated with its absence. Indeed, the epigenetic changes that are involved in neurodevelopmental disorders primarily affect cell differentiation, tissue specification, and cell maintenance [46]. Although much research has focused on the genetic and environmental/epigenetic factors that may contribute to ASD, much less focus has concentrated on the potential of these factors to act through underlying neurodevelopmental programs, programs that are regulated by early social experience, in particular social play.

3. Social play behavior

Long-standing interests in social play have focused on the pathological consequences of its absence. Experimental approaches to the study of social play behavior have focused on rodent models. Early studies of adolescent social deprivation demonstrated that it was specifically deprivation of play experiences that primarily drove the consequent long-term outcomes ([47], for review see [5]). Moreover, it was clear that even a short period of social deprivation increased motivation to engage in social play [48]. Indeed, this effect of isolation became a fundamental part of approaches to study adolescent social interactions. Social play, also called “rough-and-tumble play” or “play-fighting,” is one of the earliest forms of non-mother-directed social behavior observed in mammals. In rodents, this occurs when one adolescent rodent grabs, holds, bites, or otherwise contacts another adolescent rodent. Unlike serious fighting, the behavior occurs in the absence of functional consequences such as resource acquisition or protection and when the needs of the animal are fully met. Although the range of play behavior is extensive, researchers generally define it as an activity that is voluntary and highly reinforcing. The suggestion that males engage in

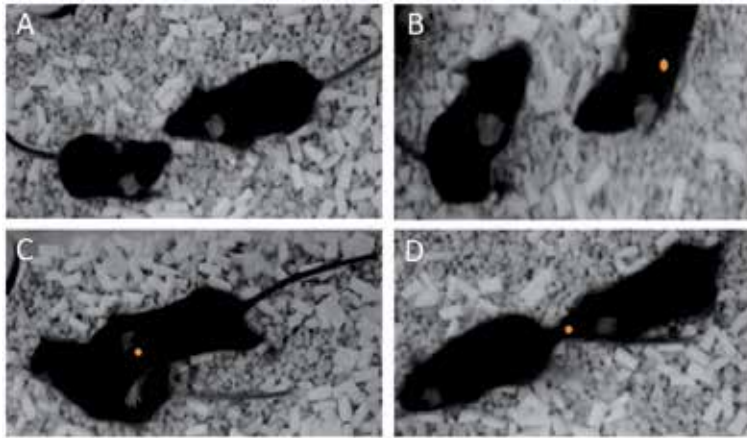


Figure 1. Social and non-social behavior in C57BL/6 mice between 28 and 35 PND. (A) Nose to nose sniffing. (B) Rearing (mouse on left). (C) Dorsal contact (mouse on right directed towards mouse on left). (D) Anogenital sniffing.

social play more than females [49] results in part on an emphasis upon play-fighting, which males exhibit more frequently and for a longer duration than females. Social play is suggested to be an affiliative form of behavior functioning to facilitate social development, and the neural changes that underlie that development. Outside of its primary context, play appears to have an obvious benefit that serves to develop physical, cognitive and social capacities for adulthood [50]. The multifunctional role of play may also facilitate the development of other non-social cognitive and emotional abilities. During rough-and-tumble play, rodents engage in a series of behaviors that include dorsal pinning, nose to nose sniffing, anogenital sniffing, and following (See **Figure 1** for some examples). Some of these behaviors may produce specific types of unique sensory experiences—for example, anogenital sniffing may expose juvenile animals to pheromones. Much focus has been on other types of behavior that may be related to dominance—and consequently more male oriented, such as dorsal pins. This might help to create the impression that males engage in more play, but in fact this may come from the definition of “play”. In any case, with regard to dorsal pins and similar types of juvenile “wrestling”-like behavior, there will be circumstances where the winners and losers become more consistent until they assume distinct phenotypes that researchers can categorize as “dominant” or “subordinate” [7]. There is some doubt as to whether this necessarily translates into adult forms of dominance behavior. Nonetheless, there has been substantial emphasis on this type of behavior in play research. Graham and Burghardt [8] categorized play behavior based on five criteria:

1. It is incompletely functional in the context in which it appears.
2. It is spontaneous, pleasurable, rewarding, or voluntary.
3. It differs from other more serious behaviors in form (e.g., exaggerated) or timing (e.g., occurring early in life before the more serious version is needed).
4. It is repeated, but not in an abnormal or unvarying stereotypic form (e.g., rocking or pacing).
5. It is initiated in the absence of stress.

Again, it is important to note that play behavior is sexually dimorphic in rodents (and other mammals), with males exhibiting more “rough-and tumble” behavior compared to females. This does not mean that females do not play, but rather that they play differently. Females significantly spend more time exploring than males and are more likely to engage in nonsocial behaviors [51]. In addition, it is also suggested that females investigate and approach their partners more than males. Males, on the other hand, spent the majority of their time in close physical contact with play partners. Although sex differences have been noted the majority of animal research studies investigating play have focused on males. Single-sex studies in males have outnumbered single-sex studies in females by a ratio of 5.5:1 [52]. Since play behavior is different in males and females, it is quite likely that it helps shape the brain and behavior in different ways, so that the consequences of the loss of social play are different.

Depriving young animals of maternal and peer social contact has long-lasting effects that persist into adulthood [53–56]. Indeed, it is perhaps of fundamental importance to determine whether the consequences of different types of early life experience are permanent. If such effects are deleterious, either in the sense of creating abnormal behavior, or in terms of preventing the development of certain types of behavior, it might be essential to intervene early in life. This description certainly fits ASD and other developmental disorders of childhood, where it has long been recognized that earlier interventions produce better outcomes. This is certainly true for language function, which has absolute critical periods. There is an intense period of social play in adolescence that is often depicted by an inverted U-shaped curve. Social play is most prominent in adolescent rodents and the behavior declines as they approach sexual maturity (**Figure 2**). Other behaviors certainly emerge at this time but have been less well-studied compared to either early adolescence or adulthood. Based on the viewpoint that play and other social behaviors early in life constitute a “dress rehearsal”, so to speak, for adult behaviors, much research has focused on how adolescent play experiences might enhance or diminish social competency and performance later in life [57], in particular mating and dominance behaviors.

Social approach is at the core of virtually all social interactions, including those between animals of the same sex and different sexes, and between familiar and unfamiliar animals. Indeed, social approach can provide important information about the relationship of animals involved in a social interaction. For example, in some situations the social approach is associated with a functional outcome (e.g. mating), while others the motivation to approach a conspecific is independent of a specific benefit [58]. There are two primary hypotheses as to why animals play: (1) it occurs because it is intrinsically rewarding in and of itself (and only occurs if the animals are happy and stress free) and (2) it occurs because it offers some type of beneficial outcome such as refinement of motor skills. However, the two hypotheses are not mutually exclusive [59], and the



Figure 2. Developmental periods in mice noting the peak period of social play during adolescence, occurring between 25 and 35 days of age.

benefits of play may depend on developmental stage (e.g. pre-weaning, post-weaning, juvenile, early-adolescent, late-adolescent) and might consequently result in different outcomes.

4. Social deprivation/isolation

The opportunity to engage in social play is essential for social and cognitive development in animals and those deprived of the interaction display neurodevelopmental consequences [60]. Social deprivation produces alterations in adult behavioral patterns, neuroanatomy, and neurochemistry [61]. The most common approach used to study the consequences of deprivation of early social isolation involves permanent isolation from weaning, or isolation rearing. Before 21 days of age, rodent behavior is largely dependent on the mother; however, after weaning it becomes primarily focused on same-sex conspecifics. Researchers often perform experiments after weaning and during the juvenile period, between 21 and 40 days of age. Some effects of isolation rearing include weight gain and enhanced aggression [7], which might be thought to be characteristic of dominant animals, as if this is a type of default developmental trajectory. However, many other behavioral outcomes are observed, that include locomotor hyperactivity [62], increased exploratory tendencies (or decreased habituation) [63], and impairment of pre-pulse inhibition [64]. These behavioral changes are thought to be indicative of enhanced dopamine function [7]. Other changes include increased anxiety [65] that may be indicative of reduced serotonin function. Many other changes have been observed in isolation reared rodents (for review see [5, 7]). Many of these changes have been shown to be permanent, persisting in adulthood, and developmentally specific, only occurring after social isolation in adolescence. Although some data indicates that male mice are more susceptible than females to neurodevelopmental interference induced by early social deprivation [66, 67], this may be in part because of a focus on behavioral outcomes that are more relevant to males (as well as a simple failure to study females, and especially to compare the effects of adolescent social deprivation in males and females in the same study under the same experimental conditions).

5. Role of serotonin in social isolation and social play

Serotonin neurons are well known to be critical regulators of mood and many other functions that are disrupted after isolation rearing. Consequently, it is not surprising that chronic social isolation from weaning [68] (for review see [69]), as well as deprivation solely during adolescence followed by subsequent social housing [70], disrupts serotonin function in a variety of ways. Broadly speaking, this can be characterized as reduced serotonin function as determined by tissue serotonin levels or the ratio of tissue serotonin to 5-hydroxytryptamine levels [71, 72], but also as reduced serotonin release as determined by *in vivo* microdialysis [68, 73, 74]. Generally speaking this might result from adaptations resulting from elevated serotonin function early in life. Consequently, it has been suggested that dorsal raphe nucleus, a major site for the origin of forebrain serotonin projections, is less responsive after adolescent social deprivation [75]. The adaptations are quite diverse, and include reductions in the expression of numerous 5-HT system-related genes in the prefrontal cortex of isolation-reared mice (including 5-HT1A, 5-HT1B, 5-HT2A, 5-HT2C, 5-HT3A, 5-HT6, and 5-HT7 receptor genes) [76]. These effects were region-dependent, the hypothalamus and midbrain having more restricted reductions, while 5-HT6 gene

expression was up-regulated in the hippocampus. The disruption of serotonin in different regions of the brain suggests that serotonin functions are not altogether reduced, but rather there are shifts the responsiveness of different components of the serotonin system. The origins of these disruptions in serotonin systems are unknown, and there is quite likely to be a complex interplay with changes in other systems that are also affected by adolescent social isolation, in particularly dopaminergic changes [77]. However, serotonin alterations are likely to play some type of primary role in the effects of adolescent social isolation since it has a role in adolescent play behavior.

Serotonin has also been shown to be fundamentally involved in play behavior [78, 79], but these effects have been suggested to be part of a broad modulation of social behavior [80]. Nonetheless, genetic or pharmacological treatments that elevate serotonin levels reduce social play in adolescent rats [81]. Similar effects were seen to occur after prenatal fluoxetine exposure [82]. Given the data on social isolation that was previously discussed, this raises questions about whether such effects entirely result from elevations in serotonin function, or perhaps result from adaptations to elevated serotonin function. It has been suggested, however, that the consequences of elevated serotonin may be bidirectional [83]. This observation might reflect the degree of perturbations in serotonin function, in a manner similar to serotonin depletions with 5,7-dihydroxytryptamine [84]. Indeed, moderate depletions produced elevations in basal extracellular serotonin levels and increased anxiety, while more severe depletions reduced extracellular serotonin levels and reduced anxiety.

Loss of the opportunity to play is thought to be central to the effects of adolescent social deprivation [47], and results in an increased motivation to engage in play in adolescence [48, 85]. However, as adults, isolation-reared rodents demonstrate a variety of deficiencies in social behavior that include impaired social recognition [86]. Indeed, the broad social incompetence of isolation-reared rodents may lead to aggression being directed towards them under ethologically relevant conditions because they do not respond appropriately during social encounters [87]. The potential comparison to ASD should be obvious, and, moreover suggest that many of the social impairments in ASD result in a similar manner, from the lack of social experience early in life, which drives the development of underlying biological mechanisms that support appropriate social behaviors. Another similarity is also found between the broader behavioral impacts of isolation-rearing upon anxiety [88] and stereotyped behavior [89], both of which are characteristic of ASD.

Perturbations in serotonin function have also been described in ASD. It has been repeatedly found that hyperserotonemia, an increased level of serotonin in the blood, is reported in 30% of autistic patients [90, 91]. The causes of hyperserotonemia, and whether this reflects similar changes in central serotonin function in this wider population of ASD patients are not known, but it is known that serotonin (5-HT) transporter gene (SLC6A4; SERT) variants modulate SERT reuptake function, thereby influencing the occurrence of hyperserotonemia in some autistic patients [92]. Research examining hyperserotonemia in ASD patients highlights the importance of classifying study groups for cognitive impairment, age, and pubertal status. For example, it was found that autistic children during pre-puberty showed a significant elevation in plasma 5-HT compared to healthy controls, whereas plasma 5-HT was not significantly elevated in a post-pubertal autistic group compared to control subjects [93]. Although peripheral 5-HT dysfunctions are consistently found in ASD patients, the biological traits that underlie these changes and how these changes may be connected to brain development and brain function have yet to be determined. Different underlying causes, both genetic and environmental, might ultimately contribute to this outcome. However, it has already been noted that genetic impairments in SERT function are observed in at least some patients

with ASD [92]. Additionally, decreased binding affinity for SERT has been observed in the brains of adults with ASD [94]. In confirmation of this relationship, ASD-related social deficits are observed in SERT heterozygous (SERT +/-) and homozygous (SERT -/-) knockout mice [26]. Deficits were observed in a standard social interaction task, as well as the social preference task. These deficits were more severe in SERT -/- mice than in SERT +/- mice, but social impairments were observed in both groups compared to littermate controls (SERT +/+) mice. Furthermore, it is interesting to note that although both SERT +/- and SERT -/- mice both had deficits in social behavior, only SERT -/- mice had increased anxiety behavior in standard tests. This would seem to suggest that these mice, in some respects, may reflect the severity of ASD, with a spectrum of effects that involve only social behavior in less severe cases, but includes more and more psychiatric co-morbidities and cognitive impairment in more severe cases. If these changes in serotonin function are critical mediators of social impairments, modulating serotonin function should improve ASD symptoms. This might be accomplished either by reducing serotonin release or by inhibiting serotonin receptors. As proof of this principle, social deficits were reversed in SERT +/- and SERT -/- mice by reducing intake of dietary tryptophan, the essential amino acid precursor of serotonin. Extracellular 5-HT levels in the brain were also decreased.

6. Communication

Given the importance of communication deficits in ASD, it would be important to explore such deficits in animal models that might reflect aspects of ASD, such as SERT +/- or SERT -/- mice, or animals that have been socially isolated. Animals use species-specific vocalization to communicate information to one another regarding identity, (individual or group), group status or mood (dominance, submissive, fear, or aggression), their next likely behavior (approach, flee, play, groom, etc.), environmental conditions (presence of predators or location of food), and in mother-offspring interactions that are likely to be involved in many roles in development, as well as facilitating maternal care. Different types of information can be conveyed through vocalization and inform us of the animal's physical, environmental, or social condition. The acoustic signal can range from simple to complex tonal signals depending on the animal's situation. Information appears to be conveyed both by the frequency of sounds, as well as the tonal pattern. Each species emits sounds in a different frequency range that is attuned with their hearing abilities. Ultrasonic vocalization is a fundamental social behavior in rodents, and understanding its evolution, and genetic and neural mechanisms will provide researchers more insight about its role in animal behavior.

Based on the use of USV to communicate, in particular during the neonatal and adolescent periods of life, mice could be a potential model for the genetic basis of human communication disorders such as autism, but to increase the utility of such studies, the role of specific aspects of USV in communication and behavior must be determined. Social deprivation produces changes in USV that seem to be related to alterations in social behavior [95–98]. Rodents are known to emit a diverse range of USV depending on the social context. When isolated from the nest, pups emit a USV that stimulates the mother to retrieve the pup [99]; this suggests that this communication signal serves a specific purpose [100]. These USVs are typically characterized by a frequency of 30–50 kHz and a duration of 10–200 ms [98], and are often termed “distress” calls, which may underestimate their purpose and meaning. As the study of USVs is still an emerging field, approaches to categorizing vocalization patterns are still being developed, but most approaches are based

upon the shape of USV calls. Each call has a name based on its shape: ascending, descending, inverted u-shape, flat, modulated, complex, and frequency “jumps”. A common approach is to group the calls based on sequence (bouts), shape, frequency (50 vs. 70 kHz), duration: 5–10 ms (short), or 20–50 ms (long), or by behavioral contexts: vocalization during mating, isolation, restraint, and so forth [101]. Given the number of categorizations involved in USV, there needs to be a standard way of classifying the measurements since it appears that various articles categorize the calls differently. This consensus has yet to completely emerge. Examples of USVs from dyadic encounters between pairs of wildtype C57BL/6 J mice and dopamine transporter heterozygous knockout mice are shown in **Figure 3**. Differences based on sex and genotype are clear, but most USV types are clearly evident.

There is evidence that mouse vocalizations are associated with specific affective states such as distress or pleasure, and that these features can be sensitive to differences in specific genetic variants or the broader genetic background. Mice vocalize in the range of frequencies that extend from human-audible range (squeaks that can be heard when handling mice) and higher into the ultrasound range, above the limit of human hearing (20 kHz and higher). While rats clearly emit ultrasonic vocalizations in response to aversive and rewarding stimuli, USV in mice are not correlated with aversive or positive state, but rather may be more likely to facilitate or inhibit social interactions [102].

Adult male mice use USV for courtship behavior in order to attract or maintain close contact with a female to facilitate mating. Both 70- and 40-kHz USVs have been found to be associated with courtship, but 40-kHz calls were also observed during mounting behavior [103], as were 50 kHz calls [95]. During male-male interactions USV is most closely related to social investigation prior to any closer agonistic or aggressive encounters [104]. More details on the information content and roles of USV in social encounters are certain to emerge. For instance, it has been suggested that USVs in adult male mice are organized as a sequence of multisyllabic call elements (or syllables) similar to songbirds [105]. The multisyllabic repertoire might allow the emitter to combine and organize syllables in different ways to increase the potential information carried [21, 106], giving mice the ability to change the relative composition of syllable types during quickly changing social encounters [103, 107, 108].

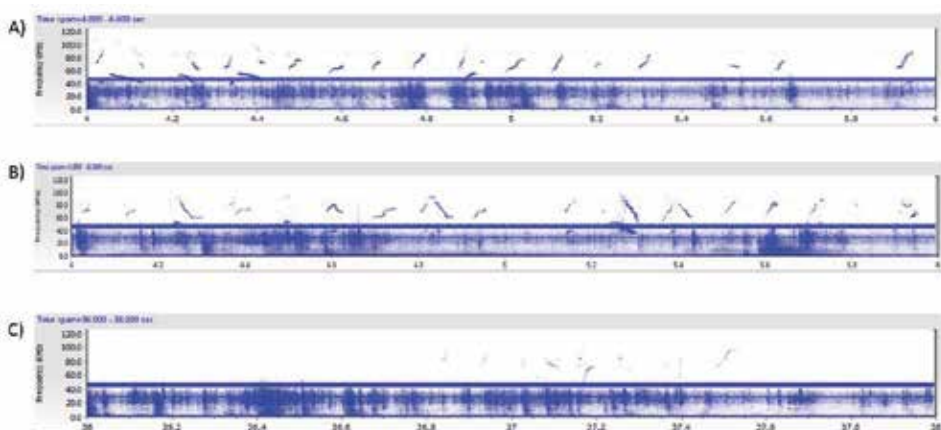


Figure 3. Ultrasonic vocalizations emitted during social interactions between mouse dyads: an isolate mouse (deprived of social interaction for 24 hours) and a social mouse. (A) Male dopamine transporter +/- pairing. (B) Female wildtype pairing. (C) Female dopamine transporter +/- pairing. Differences are seen resulting from sex and genotype.

Although not studied as often as males, the USV emitted by female mice has a similar complexity to what has been observed in males, suggesting an important role in communication. It has been observed that female mice spend more time close to males that vocalize compared to devocalized mice, suggesting that the calls are a component of male courtship behavior [108], or perhaps a “pre-courtship” behavior that initiates proximity. Another study suggests that the USVs are emitted more during female-female interaction than in opposite-sex encounters, potentially contributing to the establishment of dominance hierarchies [109]. A considerable number of 70 kHz calls are found to be emitted by female-female dyads during social encounters, suggesting that it may be modulated by the motivational state of the emitter [110]. Regrettably, the function of USV in females are still poorly understood and further research is needed to improve our understanding of the roles of USV in female mice.

Perhaps of even more importance for the current discussion, there has been no investigation of vocalization in adolescent mice during the period of most relevance to ASD. Particularly since vocalizations in adults often appear to facilitate or initiate social interactions and may also reflect the motivation to engage in social interactions, this would be of especial importance. In studying adolescent mice new patterns and functions of USV are likely to emerge. Moreover, it will be particularly important to establish the relationship between USV and ongoing behavior. Although there are distinct patterns within USV emissions in many circumstances, the correlation of the calls to specific behaviors have yet to be determined with any degree of specificity. Varied USV patterns and bouts observed in USV emission have also made the interpretation of the calls difficult at times. There are few articles addressing the limitations of studies that involve USV calls when two or more animals are placed within a cage; it is impossible to determine which animal of the two is emitting the USV under social conditions. Establishing methods for doing this will be of critical importance for advancing the field.

7. Conclusion

The effects of social isolation have been studied for decades and although there is a quantitative way to analyze behavioral aspects of social play, the implications of USV during social interaction is still an emerging field with limited data. Ultrasonic vocalization quantification will provide us with insights on how communication is affected during social play, and how this is affected by social isolation and other models that may inform us about the underlying mechanisms of ASD. Current approaches to studying dyads of mice with different attributes (e.g. experiences or genetic differences) are certainly informative, but future studies will need to address the challenge of identifying individual mice emitting USV during social encounters.


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This book focuses on an increasingly current phenomenon in various countries around the world. It offers an interdisciplinary point of view with a broad and, at the same time, in-depth vision of the various aspects that can contribute to better understanding social isolation. The authors, who represent different disciplines and belong to different countries of the world, offer high-profile scientific contributions with new perspectives in the field of social security thanks to the originality of their ideas, theories, research, scientific results and suggestions. Understanding all this opens up new horizons towards the new frontiers of knowledge.

“I go out. You want to come? The insulation would be too heavy; desperate and crazy on the deserted streets. To demand a destiny.”

(Sylvia Plath)

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