Integrating Traditional Bullying and Cyberbullying: Challenges of Definition and Measurement in Adolescents – a Review

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Abstract The need for an integrated approach to studying bullying behaviors, both traditional and cyber, in adolescents is increasingly evident. The definitional criteria of bullying are well established in the traditional bullying literature and include (i) intention, (ii) repetition, and (iii) power imbalance. There is emerging evidence that these same criteria can be broadly applied to cyberbullying behaviors; however, important additional elements may include anonymity and publicity in a cyber-act. Fundamental to integrating traditional and cyberbullying are the measurement tools used to capture the extent and range of bullying behaviors. Self-report surveys are widely adopted as a method for measuring the prevalence of bullying victimization and perpetration. The current paper reviews the definitional and measurement issues relating to traditional and cyberbullying among school-aged youth. We conclude that both traditional and cyberbullying behaviors should be measured simultaneously. Operationalizing components of the definitional criteria in self-report surveys will result in more consistent and reliable measurement across all bullying behaviors.

The detrimental effects of bullying on the well-being of children and adolescents' are widely recognized (Arseneault et al. 2010; Gini and Pozzoli 2009; Hawker and Boulton 2000; Limber 2006; Moore et al. 2014; Nansel et al. 2001; Swearer et al. 2001). Victims of bullying report poorer interpersonal relationships with peers, loneliness, lower self-esteem (Brighi et al. 2012; Nansel et al. 2001), symptoms of depression and anxiety, social withdrawal (Menesini et al. 2009), and suicidal thoughts (Hinduja and Patchin 2010; Klomek et al. 2008). Those who bully others report a higher level of externalizing symptoms, including general aggression, delinquent and rule-breaking behaviors (Menesini et al. 2009), and substance use (Nansel et al. 2001). Individuals who are both bullies and victims (bully-victims) are at the highest risk of developing social and mental health problems (Gradinger et al. 2009; Juvonen et al. 2003; Perren et al. 2010). In response to these negative outcomes, a range of intervention programs have emerged. A systematic review reported that 17 out of 44 antibullying programs significantly reduced bullying victimization on average by 20–23 %, compared with control schools (Ttofi and Farrington 2009). Fundamental to this work are measurement tools used to evaluate the effectiveness of antibullying interventions. The detrimental outcomes are consistent across traditional and cyberbullying. It is therefore important that bullying perpetration (bullying others) and victimization (being bullied) have definitional criteria that translate into reliable and valid measurement of these behaviors.

Bullying is a distinct form of peer aggression involving negative actions that are intentional, repetitive, and involve an imbalance of power between victim and perpetrator (Olweus 1993). Negative actions may be verbal (e.g., name calling, threats), physical (e.g., hitting, kicking, damaging victim's property) or relational/social (e.g., social exclusion, rumor spreading) (Monks and Smith 2006; Olweus 1996). Collectively, these behaviors are often referred to as "traditional" forms of

bullying (Smith et al. 2008). Imbalance of power can be derived from a physical advantage (e.g., size, age, strength), social status in a peer group (e.g., a popular versus less popular student), or strength in numbers (e.g., group targeting a single person) (Olweus 2013; Pepler and Craig 2009). Power may also be achieved through knowing a person's source of vulnerability (e.g., appearance, learning problem, family situation) and then using that knowledge to cause distress. Bullying by definition is a repetitive behavior, and with repeated incidents, the power relationship is consolidated: The bully increases in power, and the victim loses power. As a result, it makes it difficult for the adolescent who is being bullied to respond or to resolve the problem on their own (Pepler and Craig 2009).

Virtual and electronic communication is a major component of an adolescent's social life (Williams and Guerra 2007). Technological devices such as mobile and smart phones, portable personal computers, and tablets provide a new form of interpersonal communication, and an overwhelming majority (approximately 90 %) of adolescents (12–17 years) have internet access (Australian Communications and Media Authority 2008; Madden et al. 2013). The use of new technologies for the purpose of bullying has emerged, whereby electronic media are used to communicate intimidating or hurtful messages (Smith et al. 2008).

Currently, there is debate on what constitutes cyberbullying and how cyberbullying is both similar and different to traditional bullying (Menesini 2012). An associated issue is how to adapt measurement tools to capture the expanded spectrum of bullying behaviors. A clear definition is critical for establishing validity in measurement; uncertainty still exists as to what construct is actually being assessed by current measures of cyberbullying. This has limited (a) the reliability of studies of prevalence, incidence, outcomes, and interventions associated with cyberbullying and (b) the ability to make meaningful comparisons with traditional bullying. In this paper, we review the key literature on defining and measuring bullying among school students. We discuss the challenges of defining and subsequently measuring traditional bullying and cyberbullying behaviors and aim to identify possible solutions. Avenues for further research to improve methodologies and develop more refined measurement tools are presented.

Defining Bullying

Olweus' (1993) definitional criteria of intent to harm, repetition, and power imbalance are widely used as a means of distinguishing bullying from other forms of aggression (Smith 2011). Definitions of cyberbullying are largely based on those for traditional bullying (Dehue et al. 2008; Katzer et al. 2009; Kowalski and Limber 2007; Menesini 2012; Slonje and Smith 2008; Smith et al. 2008; Wang et al. 2009). There is increasing support that these three key criteria defining traditional bullying are largely applicable to cyberbullying (Olweus 2013; Smith et al. 2013). Research that can produce meaningful and comparable prevalence estimates of traditional and cyberbullying behaviors requires studies to examine these behaviors in a similar way, which is typically delineated by means of a common definition (Olweus 2012a).

Measuring Bullying

Approaches to Measurement There is consensus about the characteristics of bullying behaviors (Bovaird 2010); however, the approach to measurement is continuously debated (Furlong et al. 2010; Shaw et al. 2013). Choosing an appropriate methodology to measure bullying behaviors is typically guided by the aim and purpose of the research study (Felix et al. 2011; Greif and Furlong 2006), although self-report assessments are most commonly used (Felix et al. 2011; Swearer et al. 2010).

The advantages and disadvantages of self-report versus other types of assessments such as peer and teacher nomination are thoroughly discussed (Cornell and Bandyopadhyay 2010; Furlong et al. 2010; Ortega et al. 2001). Furlong et al. (2010) suggested that self-report is better at gaining the student's perspective and is therefore more likely to reflect intention and power imbalance. Furthermore, self-report methods are easier to implement than other methods such as intensive behavioral observations of students' interactions. Griffin and Gross (2004) suggested that reports by third parties, for example teachers, may be limited to more overt than covert forms of bullying. It is generally agreed that, for the most part, it is useful to examine peer-to-peer bullying by asking students themselves.

Comparison of Peer Ratings/Nomination and Self-Report Methods Peer ratings/nominations ("normative" measures) are another method frequently compared with self-report methods ("ipsative" measures). Both approaches are applied to bullying research (Olweus 2010; Pellegrini 2001). Normative measures provide information about what other individuals think of those bullying or being bullied. In contrast, ipsative measures provide a personal account of bullying and victimization, informed by an individuals' perception of their experiences. This method provides the opportunity for those victimized to report bullying that may not be known to people other than the victim and bully (Shaw et al. 2013).

The aim of peer nominations/ratings is to measure enduring characteristics, such as the behavior patterns that "nominees" display or are exposed. There are, however, several problems with using the peer nomination method for estimating the prevalence of bullying (Olweus 2010). Firstly, the method does not directly provide information about the frequency of specific behaviors or conditions, but rather the number and proportion of nominations. The peer nomination method relies on the use of a cut-off point for classifying a particular behavior, for example, a student being a "victim" or "bully." Any specified cut-off point is complex and difficult to reproduce (Olweus 2010). The peer nomination/rating method may be useful for understanding the peer context in which the bullying has occurred, but it is generally agreed that it is not sensitive in producing robust estimates of the prevalence of bullying.

Overall, there are fewer problems with using self-report questionnaires to estimate the prevalence of bullying. Although this method relies on students' honesty and insight into their own behavior when responding to questions, most students take the task of self-report questionnaires seriously and respond reliably (Olweus 2010). The method requires a subjective judgment, but a significant advantage of self-report assessments are that they offer information on experiences, which are privately held and which may be missed by peers, parents, and teachers. At a practical level, self-report questionnaires can be administered to large numbers of students over a short amount of time, at relatively low cost, and without complex ethical and consent issues related to peer nominations/ratings or observation methods (Espelage and Swearer 2003; Griffin and Gross 2004;

Ortega et al. 2001). Based on these advantages, and with fewer weaknesses, self-report questionnaires appear the method of choice for measuring bullying.

Comparison of Definition-Based and Behavior-Based Self-Report Measures Bullying measures have generally adopted one of two approaches, either (a) presented a list of bullying behaviors and asked how often respondents had experienced or perpetrated each action, or (b) provided a working definition of bullying and then asked respondents if they had experienced a type of victimization or been involved in perpetration (Cornell and Cole 2012; Felix et al. 2011). The definition-based measurement strategy is used to facilitate a shared meaning of bullying across all participants in a study. This is crucial to the accurate reporting of the prevalence of bullying (Cornell and Cole 2012). The definition of bullying has evolved to include a range of bullying behaviors, and so studies have adopted various definitions. The result is wide ranging prevalence estimates, which makes it difficult to compare rates across studies (Felix et al. 2011).

In contrast, behavior-based measurement requires youth to respond to a behavioral list that often does not use the term bullying/bully/victim. This is done to avoid individual perceptions, stigma, or bias associated with using the term "bully" or "victim," and to examine the frequency of each type of behavior (Felix et al. 2011). A significant disadvantage of this approach is it often neglects intention and power imbalance, and therefore fighting between peers of equal strength is likely to be included, which inflates prevalence estimates (Smith et al. 2002; Felix et al. 2011). Overall, this suggests that operationalizing definitional criteria of bullying may help improve the accurate classification of cases of bullying.

Comparison of Single-Item and Multi-item Survey Measures The structure of self-report surveys and the types and number of items are some of the key issues to consider when measuring bullying. Some researchers have argued that one single item can be a reliable and economical measure of prevalence (Solberg and Olweus 2003). A single-item measure can be sufficient if the construct consists of one concrete object that is easily and uniformly conceptualized (Rossiter 2002). Alternatively, multi-item scales that ask students about the frequency of specific behaviors representing the construct of bullying (Austin and Joseph 1996; Espelage et al. 2000; Peskin et al. 2006) can give a more valid, accurate, and reliable measurement. A multi-item measure is considered (a) more valid, given it is less likely a single-item can fully represent a complex phenomenon from multi-dimensional theoretical models; (b) more accurate, because single-item measures often lack precision and cannot discriminate among fine degrees of an attribute; and (c) more reliable, because single-item measures are prone to a high degree of random error (Menesini and Nocentini 2009; Nunnally 1978). Nonetheless, there are limitations to using multi-item scales. Firstly, not all possible acts of bullying are necessarily included in the multi-item list of behaviors, and secondly, not all items are necessarily of equal severity. For example, some behaviors may occur more regularly without being perceived as bullying, while others may have very long-lasting effects even though they occur much less frequently (Menesini and Nocentini 2009).

The issue over the advantages and disadvantages of single versus multi-item survey approaches remains contended. Again, the choice over the appropriate format is often guided by the aim of the study (Felix et al. 2011; Greif and Furlong 2006). If the research aim is to estimate and compare the prevalence of bullying victimization and perpetration in general, single global questions are used to categorize students as having "been bullied" or "bullied others" (Solberg and Olweus 2003). If the

aim is to estimate the prevalence of different forms of bullying or to examine multidimensional conceptual models, to track changes in bullying behaviors over time, a multi-item scale would be more relevant (Felix et al. 2011). The use of both a global question as well as a multi-item scale enables overall prevalence to be estimated and the opportunity to also examine the information gained from the additional follow-up questions.

Operationalizing Definitional Criteria in Measurement Scales Operationalizing definitional criteria of bullying behaviors (intention, repetition, and power imbalance) in survey items is a challenge to the measurement of bullying. One potential problem identified is that self-report may be subject to a misattribution of the aggressive behavior. The Olweus definitional criteria clearly and sufficiently differentiate bullying from other forms of peer-to-peer aggression. However, respondents must be able to interpret the intention of a behavior, which may be less clear. For example, Guerin and Henessy (2002) argue that a behavior that is not necessarily intended by the perpetrator to cause hurt or harm, may be considered bullying if it is taken as such by the victim. Furthermore, an incident need not be repeated in order to consider it as bullying, especially if one incident causes long lasting fear of it happening again (Besag 1989). These are important points to evaluate when developing self-report measures of bullying victimization and perpetration.

Most self-report surveys include a definition of bullying with the three criteria prior to the questions. We argue that, although power imbalance and intention to harm are made explicit at the beginning of a questionnaire, this is not the same as operationalizing these definitional criteria. Some work (Felix et al. 2011; Swearer 2001) has included items in self-report questionnaires to capture the respondents understanding of intention and power imbalance [Felix et al. (2011)—California Bullying Victimization Scale (CBVS); Swearer, 2001, The Bully Survey (BYS)]. This work has shown that assessing these factors can help to accurately identify victims of bullying (Felix et al. 2011). Information gathered on all definitional criteria may then be used to inform the severity of different bullying experiences (perpetration or victimization) and may also be used to make useful comparisons between traditional and cyberbullying.

Measuring Bullying Using Self-Report to Estimate Prevalence

The quality of understanding young people's experiences with bullying (victimization and perpetration) relies on the ability to effectively assess the construct. Despite the availability of various self-report measures, an assessment originally developed by Olweus (1978), modified over time (Olweus 1996, 2012b), has remained the most popular method for measuring bullying (Cornell and Bandyopadhyay 2010; Greif and Furlong 2006; Kyriakides et al. 2006; Pellegrini 2001), and has also been adapted by other researchers in the development of new scales (Shaw et al. 2013) or for use in epidemiology studies (Nansel et al. 2001).

The content of the Revised Olweus Bully Victim Questionnaire (OBVQ; Olweus 1996) was derived from the main findings of Olweus' research (Olweus 1978, 1993), as well as other seminal work (Garcia and Perez 1989; Genta et al. 1996). The OBVQ consists of 40 items that measure physical, verbal, indirect, racial, sexual forms of bullying victimization and perpetration. The OBVQ uses two

single-items as a measure of the prevalence of victimization (been bullied) and perpetration (bullied others). Subsequent items are used to measure the extent of different forms of bullying victimization and perpetration.

The OBVQ has robust psychometric properties including: high internal consistency (Breivik and Olweus 2012), strong construct validity (Olweus 1978, 1994; Solberg and Olweus 2003), concurrent validity (Bendixen and Olweus 1999; Solberg and Olweus 2003), and discriminant validity (Solberg and Olweus 2003). In a large sample of Norwegian students aged 11–15 years (N=5,171, nested in 37 schools), Solberg and Olweus (2003) measured bullying using the two global items of bullying (victimization and perpetration) from the OBVQ, which used "the past couple of months" as the reference period. Researchers found 10.1 % of students were bullied (bullying victimization), 6.5 % of students bullied others (bullying perpetration), and 1.6 % identified themselves as bully-victims.

The World Health Organization also administered a version of Olweus' measure to a representative sample of over 15,000 students from grades 6 to 10, in public and private schools in the USA. Overall, 29.9 % of the sample reported moderate or frequent involvement in bullying, as a bully (13.0 %), as a victim (10.6 %), or as bully-victim (6.3 %) (Nansel et al. 2001). The study also found that male students were more likely than female students to report being both perpetrators and targets of bullying. The frequency of bullying was higher among younger students (grades 6–8) than older students (grades 9 and 10).

Shaw et al. (2013) outlined that none of the existing self-report multi-item scales measuring bullying, specifically with adolescents (Bond et al. 2007; Espelage and Holt 2001; Felix et al. 2011; Hunt et al. 2012; Mynard and Joseph 2000; Olweus 1996; Reynolds 2003; Rigby 1998) are universally recognized as the instrument of choice. Some measure only victimization (Felix et al. 2011; Hunt et al. 2012; Mynard and Joseph 2000) or the perpetration and victimization items differ (Espelage and Holt 2001). In contrast, other surveys have very few items, which may limit their representation of the different forms of bullying (Bond et al. 2007; Rigby 1998). Some are focused more towards verbal and physical forms of bullying, with fewer items measuring more indirect forms (Espelage and Holt 2001; Rigby 1998). Furthermore, there is limited evidence available regarding the construct validity of scores from multi-item scales designed to measure bullying victimization and perpetration (Shaw et al. 2013).

The limitations of existing self-report instruments, specifically for their succinct measurement of the different forms of bullying among adolescents, and the general absence of robust estimates of item and scale validity for bullying measures led Shaw et al. (2013) to develop the 20-item Forms of Bullying Scale (FBS); an adaptation of the revised OBVQ (Olweus 1996), and to a lesser extent the Peer Relations Questionnaire (Rigby 1998). Both a victimization and a perpetration scale were developed to measure the frequency of involvement in different forms of bullying, among adolescents aged 12–15 years. Scale validity was tested using data from two independent samples of Australian students (N=3,496 in grade 8, N=783 in grades 8–10, respectively). In this scale, bullying behaviors were measured in a way that suggested they could occur both online or offline. It was argued that this is because both means of bullying may co-occur, which makes it difficult for young people to report these behaviors separately (Shaw et al. 2013).

Overall, the results supported the construct and concurrent validity of the FBS. Confirmatory factor analysis revealed a two-factor model (victimization and perpetration) for the overall sample and also for male and female students. In addition, global single items were used to dichotomize students as victims (or not), and as perpetrators (or not). Associations with conceptually related variables

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demonstrated robust evidence of convergent and discriminant validity (Shaw et al. 2013). For the victimization scale, higher scores were associated with increased mental health problems (depression, anxiety, and emotional symptoms) and greater problems with peers, and correlated more highly with mental health outcomes than the perpetration scale. Furthermore, higher scores on the perpetration scale were associated with increased conduct problems and less engagement in prosocial behaviors, and the association with conduct problems was marginally higher than for the victimization scale (Shaw et al. 2013). In summary, the FBS measures what the authors termed "global forms of bullying" that may occur off- or online and therefore was not intended as a comprehensive measure of cyberbullying (Shaw et al. 2013). The authors recommended that separate cyber-specific scales be included in surveys to explore the unique aspects of the behavior.

In summary, researchers have developed a number of self-report instruments to measure bullying among school-aged youth (Hamburger et al. 2011). The study of traditional bullying began over 40 years. In contrast, the conceptualization and measurement of cyberbullying has emerged over the past decade. A significant body of work has explored the phenomenon of bullying through the use of Information Communication Technologies, somewhat separately from the work on traditional bullying. It is only more recently that these two areas have begun to converge.

Measuring Cyberbullying

It is generally well accepted that cyberbullying is an aggressive, intentional act, carried out by a group or individual, using electronic forms of contact, repeatedly and over time against a victim who cannot easily defend themselves (Smith and Monks 2008). Cyberbullying is a term sufficiently broad enough to incorporate a range of modalities of cyber-behaviors, and it is meaningful because it differentiates from more general "cyber-aggression" where there is no power imbalance between parties involved, nor need for repetition. This is an important distinction when considering measurement issues relating to the prevalence of cyberbullying. There is good evidence that cyberbullying can be incorporated into current bullying instruments (Wang et al. 2010, 2012). Like traditional bullying, cyberbullying can be measured using key global questions, or by focusing on multiple different cyber behaviors (Katzer et al. 2009; Ybarra et al. 2007). However, debate surrounds the definitional criteria applied to cyberbullying behaviors and the measurement of sub-types of cyberbullying.

Some researchers treat cyberbullying as a "type" of bullying, equivalent to physical and relational bullying (Wang et al. 2009), whereas others treat it as an "environment," equivalent to school (Ybarra et al. 2012b). Ybarra et al. (2012a) argued that if it is instead treated as a communication mode, cyberbullying becomes a distinct and meaningful category. In their study, Ybarra et al. (2012a) aimed to identify the best method for measuring bullying more broadly. Specifically, the researchers aimed to identify which measure results in the highest percentage of accurate self-classification, involving (i) presence/absence of a definition and (ii) presence/absence of word "bully" in test items. Follow-up questions examining definitional criteria of power differential, repetition, and bullying over time were used to examine misclassification. Measures that comprised a definition but not the word "bully" had the highest rate of false positives and therefore the highest rate of misclassification. The authors concluded that where possible measures of traditional and cyberbullying should include the word "bully" as well as directly measure aspects of bullying such as power differential, repetition and over-time in order to reduce misclassification (Ybarra et al. 2012a).

Since 2005, global cyberbullying and cyber-victimization items were added to the revised OBVQ (Olweus 2012b). This is followed by another item that asks about the medium through which the event occurred: via mobile phones, the Internet, or both. Researchers have identified a number of common cyberbullying behaviors via mobile phones and the Internet (Smith and Slonje 2010). The high degree of overlap between these platforms means that there is probably little value in distinguishing cyberbullying behaviors that occur through different technological devices. Other studies of cyberbullying have focused on specific cyberbullying behaviors. Smith et al. (2008) asked students (aged 11–16 years) whether they had experienced bullying of any kind, and then specifically cyberbullying, in the past couple of months (5-point scales: never, only once or twice, two or three times a month, about once a week, and several times a week). Students were then asked how often they had (i) experienced cyberbullying and (ii) cyber-bullied others, for seven different media (text messaging, pictures/photos or video clips, phone calls, email, chat rooms, instant messaging, and websites). The results of the study emphasized the importance of including cyberbullying in survey instruments and also considering different types of cyberbullying behaviors rather than treating them as a global phenomenon (Smith et al. 2008).

To date, the majority of the measurement instruments designed to assess cyberbullying lack the minimum psychometric standards of scale development. A recent systematic review reported that of the 44 instruments examined, only 12 had been derived using exploratory or confirmatory factor analysis (Berne et al. 2013). Scale development should employ both statistical approaches (Tabachnick and Fidell 2013). Furthermore, almost half of the instruments included in the review do not use the concept of cyberbullying. Even though numerous researchers use terms other than cyberbullying (e.g., "cyber-harassment," "internet harassment," "electronic bullying"), the definitions they employ are largely congruent with cyberbullying behaviors and it is increasingly evident that "cyberbullying" is the preferred term (Bauman 2013; Kowalski et al. 2012; Tokunaga 2010).

It is also important that researchers identify the specific behaviors that represent the construct of cyberbullying. Menesini et al. (2011) used both exploratory and factor analysis to examine the prevalence and dimensional structure of cyberbullying in a sample of 1,092 Italian adolescents. The main aim of the study was to identify the underlying structure of the cyberbullying construct and, secondly, investigate the relative severity and discrimination of different cyber-acts. Cyberbullying was measured using two multi-item scales, one for perpetration and the other for victimization behaviors. Both scales consisted of 10 items asking how often in the previous 2 months adolescents had experienced different behaviors, and these were evaluated along a 5-point scale (never, only once or twice, two or three times a month, about once a week, several times a week). Confirmatory factor analysis showed that cyberbullying was a unidimensional construct. Item response theory was used to test whether the items were strong indicators at various levels of cyber-victimization and cyberbullying severity. The results showed that the items formed a continuum of severity of different acts, from the least severe such as "silent/prank calls" and "insult on instant messaging" to the most severe, visual acts (photos/videos/pictures) (Menesini et al. 2011). The authors acknowledged that additional research examining the definitional criteria of cyberbullying is needed, specifically with regards to intention and power imbalance. Menesini et al. (2011) suggested that, once these criteria are well defined in the cyber-context, they should be included in cyberbullying measurement scales.

Although some definitional criteria of traditional bullying are relevant to cyberbullying, there are difficulties extending the issues of repetition and power imbalance (Smith 2011; Smith and Slonje

2010). For example, in terms of repetition, a single cyber-act such as posting a hateful comment may be seen, commented on, and forwarded by many others. It is also difficult to specify the concept of imbalance of power in the cyber context, given that, in traditional, face-to-face bullying, it was derived by the higher physical or psychological strength of the bully or by a numeric criterion (the number of bullies compared to the victim) (Menesini and Nocentini 2009). How this is defined in a cyber-context is not yet agreed. Perhaps, the imbalance of power can be described as a higher technological ability of the bully, or even a higher rank position of the bully in a virtual community (Menesini and Nocentini 2009). The complex nature of cyberbullying makes it difficult to evaluate the intentional or reactive nature of a cyber-attack. Some research has shown that many victims of cyberbullying were not distressed or could easily block the harasser (Wolak et al. 2008; Ybarra and Mitchell 2004). In addition, the easy termination of these episodes by the victim suggests that some experiences of cyberbullying may not involve an imbalance of power in which victims have difficulty defending themselves from the person(s) bullying them. Instead, additional criteria may be needed to describe cyberbullying, such as the degree of reported distress by the victim (Menesini and Nocentini 2009).

The unique possibility for anonymity in an act of cyberbullying, where the victim does not know the identity of the bully, may increase feelings of vulnerability in the situation (Dooley et al. 2009; Slonje and Smith 2008). This may also reduce the need for power imbalance as a definitional criterion for cyberbullying (Kowalski et al. 2008). In addition, public as opposed to private exchanges between people characterizes acts where a large audience may be involved. In a previous study, adolescents reported that cyberbullying acts that included a large and public audience were the most severe type of cyberbullying (Slonje and Smith 2008). This evidence shows that some researchers have argued that incorporating anonymity and publicity in cyberbullying may be more important than repetition and power imbalance. Nocentini et al. (2010) investigated this view by asking adolescents for their perspective on the criteria used to define cyberbullying.

Nocentini et al. (2010) conducted focus groups with 70 adolescents to examine the perception of different criteria to label cyberbullying. In relation to the three bullying criteria, participants believe that if the victim was affected by the behavior then it constituted bullying. The results also showed that the imbalance of power was not viewed independently of intent to harm. It was suggested that this is because it may be easier to defend or respond to an act of cyberbullying, which indicates that imbalance of power may be less relevant to instances of cyberbullying. Repetition was an important criterion for labeling acts of cyberbullying because it could differentiate between a joke and an intentional attack, and was used to characterize the severity of the action (Nocentini et al. 2010). Adolescents were also asked about additional criteria of anonymity and publicity. These criteria were found to connote the severity and nature of the cyber-attack and the victim's reaction, but they did not constitute a requisite for labeling an act of cyberbullying. For example, if a cyber-act occurred only once, and it was public, this was still considered cyberbullying (Nocentini et al. 2010). This suggests that repetition is an important criterion where cyber-acts are private; however, it is less important for acts that are public. Similarly, an anonymous cyber-act can raise insecurity and fear. If the perpetrator is someone the student knows, it would be perceived as more hurtful than if it was from a stranger (Nocentini et al. 2010). This work has established different parameters in which to consider cyber-acts; however, these findings need replication and further clarification. Another study systematically investigated the role of five definitional criteria for cyberbullying across six European countries (Menesini et al. 2012). The definitional criteria of intention, imbalance of power, repetition, anonymity, and publicity were combined through a set of 32 scenarios, covering four types of behaviors (written–verbal, visual, exclusion, and impersonation). The results across

countries and types of behavior suggested a clear first dimension characterized by imbalance of power and a clear second dimension characterized by intention and anonymity. Adolescents evaluated a scenario as constituting cyberbullying when imbalance of power and intention to harm were present, but not repetition—which may be less relevant in cyberbullying. In addition, participants showed a higher probability of perceiving the situation as cyberbullying if the attack was intentional and nonanonymous, and also a lower probability if the attack was not intentional and anonymous. Again, together with the intention, the role of anonymity as a specific cyberbullying criterion was clearly identified.

Overall, these findings suggest that cyberbullying should be considered under the more general definition of bullying. However, it may still be useful to add additional criteria for the cyberbullying context. This could be achieved using a single global item each for cyberbullying victimization and perpetration, followed by additional sub-questions that ask respondents about publicity and anonymity aspects of the cyberbullying. Future research should focus on the applicability of each definitional criterion to cyberbullying (see Table 1 for conceptual summary). It is evident that publicity and anonymity may play a more important role than repetition and power imbalance in the cyberbullying context. It is plausible that publicity and anonymity may contribute (individually or collectively) to the imbalance of power in cyberbullying. Further research on the role of anonymity and publicity is necessary. There is currently no measure that combines the primary definitional components (intention, repetition, and power imbalance), in a way that also assesses publicity and anonymity, to independently measure both traditional and cyberbullying (Table 2).

Measuring Traditional and Cyberbullying Together

There is an emerging body of research that has examined traditional and cyberbullying behaviors collectively. It is clear the value of considering both bullying behaviors simultaneously, because it allows for meaningful comparisons across different behaviors. Wang and colleagues have produced two empirical studies which considered bullying victimization (Wang et al. 2010) and perpetration (Wang et al. 2012), using items from the revised OBVQ (Olweus 1996, 2012b). The study measured physical, verbal, relational (social exclusion and rumor spreading), as well as cyberbullying, in a nationally representative sample of adolescents (grades 6–10) from the USA.

Wang and colleagues studied the patterns of different types of victimization (Wang et al. 2010) and perpetration (Wang et al. 2012) using latent class analysis. These two studies are some of the first to examine both traditional and cyberbullying behaviors in a large nationally representative sample. They found that different types of victimization co-occur among certain individuals, whereby the patterns were best described using a three-class model. Adolescents in the first class were targets of all bullying behaviors (class 1: 9.7 % male, 6.2 % female). A second class modeled adolescents marked by verbal/relational victimization (class 2: 28.1 % male, 35.1 % female). A third class was found to include those who had minimal experience of any victimization (class 3: 62.2 % male, 58.7 % female) (Wang et al. 2010). In a follow-up study, Wang et al. (2012) found a similar three-class pattern of results when they examined bullying perpetration (all types bullies: 10.5 % male, 4 % girls; verbal/social bullies: 29.3 % boys, 29.4 % girls; non-involved adolescents: 60.2 % boys, 66.6 % girls). Overall, the results suggest that cyberbullying (both victimization and perpetration) does not occur alone, but alongside other bullying behaviors (physical, verbal, and social).

Another important issue is to determine whether adolescents respond to questions about cyberbullying in same way they do for traditional bullying, and also whether cyberbullying can be measured using the same types of items used for measuring traditional bullying (Law et al. 2012). In their first study, Law et al. (2012) used exploratory and factor analyses to determine whether adolescents differentiated cyberbullying/victimization items from physical, verbal, and social bullying/victimization items (N=17,551, grades 8–12). Overall, adolescents distinguished items pertaining to traditional bullying (physical, verbal, and social) as either about victimization or perpetration, but they did not differentiate between the role of bully and victim for cyberbullying. This result was further investigated in a second study (N=733, aged 11–18 years), which also demonstrated that adolescents did not differentiate between bullies, victims, and witnesses in online interactions; rather, they made distinctions among the methods used for the aggressive act (i.e., sending mean messages or posting embarrassing pictures). One significant limitation of these studies is that they measured cyber-aggression, and not cyberbullying per se. Cyber-items were broad, and there was emphasis on the mode of the behavior, rather than the role. Therefore, it is unsurprising that the analyses supported "mode" as opposed to "role." In the second study, no direct comparison with traditional bullying was made, and the scale used to measure "cyberbullying" was developed for the study, so its psychometric validation is limited. Together, these findings highlight the complexity in studying cyberbullying and that factors important for cyberbullying may be different to those of traditional bullying. However, they also emphasize the importance of equivalent definition and measurement approaches when evaluating potential similarities or differences between traditional and cyberbullying.

It is therefore unclear whether any possible differences between traditional bullying and cyberbullying are due to mode/medium per se or other specific aspects of cyberbullying. Factors of publicity and anonymity have previously been associated with cyberbullying. The aspects that may distinguish cyberbullying from traditional bullying are difficult to implement in standard cyberbullying and traditional bullying scales. Especially in a way that makes systematic comparisons possible. Sticca and Perren (2013) used an experimental approach to examine the role of medium (cyberbullying versus traditional bullying) and publicity (public versus private), and medium and anonymity (anonymous versus not anonymous). Participants were Swiss students in grades 7 and 8 and were asked to rank a set of hypothetical bullying scenarios from the most severe to the least severe. Each scenario was manipulated based on aspects of medium and publicity (study 1) and medium and anonymity (study 2). Overall, public scenarios were perceived as worse than private ones, and anonymous scenarios were perceived as worse than non-anonymous ones. In addition, cyber scenarios were generally perceived as worse than traditional ones; however, these effect sizes were small. Sticca and Perren (2013) concluded that the role of medium is secondary to the role of publicity and anonymity when evaluating the severity of a bullying scenario. Research that has investigated both definitional and measurement issues relating to traditional and cyberbullying, has demonstrated that knowledge about the interaction and overlap of bullying behaviors, and their perceived severity is useful. It has required the research program to return to the fundamental tenets for conceptualizing bullying behaviors in order to move into a new phase of research on bullying. Although it is clear that further enquiry is necessary, together, this work has shown that integrating traditional and cyberbullying can be valuable, and will further our understanding of the context of bullying behaviors with the advent of technology.

Finally, if we argue that traditional and cyberbullying should be measured together, it is important to also demonstrate that both behaviors are predictive of the same outcomes. There is now a strong body of research showing that cyberbullying is independently associated with poor mental health

(Bonanno and Hymel 2013; Dooley et al. 2012; Ortega et al. 2012; Suzuki et al. 2012), which is consistent with traditional bullying. Furthermore, researchers have also showed that roles (bully/victim) in traditional bullying predicted the same role in cyberbullying (Raskauskas and Stoltz 2007). In addition, those adolescents involved in or exposed to combined traditional and cyberbullying as, bullies, victims, or bully-victims have the highest levels of emotional and behavioral problems (Gradinger et al. 2009). Together this suggests that traditional and cyberbullying are predictive of similar outcomes in adolescents and that measuring them together is advantageous. It is also important to understand the sex differences across the two behaviors. Currently, the evidence suggests that boys are more likely to perpetrate cyberbullying; however, there were no sex differences for cyber-victimization (Gradinger et al. 2009; Li 2006). Unfortunately, these studies have the limitations of definition and measurement issues previously outlined. Combining traditional (especially social/ relational and covert forms) and cyberbullying into a single global measure may preclude sex differences, and this has implications for targeting prevention. Further research is necessary to delineate sex differences across traditional and cyberbullying.

Future research on bullying among adolescents should attempt to include both traditional and cyber-bullying elements. In order to integrate the research on traditional and cyberbullying behaviors, and to evaluate the similarities and differences between the behaviors, the same fundamental definitional criteria must be adopted. The definitional criteria of intention, repetition, and power imbalance are well established in the literature on traditional bullying. These same criteria are relevant to cyberbullying (Nocentini et al. 2010); however, additional criteria such as anonymity and publicity may also be required. It is generally agreed that the use of self-report questionnaires are a superior methodology for examining the prevalence of bullying behaviors and their association with other variables. It is suggested that two global items of capturing bullying perpetration and victimization, similar to the revised OBVQ (Olweus 1996) are used to examine the overall prevalence of bullying behaviors and that they include both traditional and cyberbullying behaviors. For each of the two global items we recommend using a number of additional sub-items, which ask about specific types of bullying behaviors (physical, verbal, social/relational, and cyber). Currently, the repetition criterion is operationalized in self-report questionnaires, but most often, the criteria of intention or power imbalance are not. Other studies have acknowledged that operationalizing the definitional criteria may be a useful measurement approach (Menesini et al. 2011).

In the future, bullying sub-scales could operationalize all three criteria in order to quantitatively test which definitional criteria are most important to different bullying behaviors. In addition, bullying victimization sub-scales would desirably measure the level of severity/ distress associated with a particular type of bullying. Again, this will make it useful for making comparisons between different behaviors. It is suggested that these criteria be evaluated using a continuous scale to avoid issues relating to dichotomizing variables and gives respondents more freedom in their response. For cyberbullying and cyber-victimization, additional criteria of anonymity and publicity should also be examined. These additional criteria appear to inform the severity of an act of bullying in the cyber context (Menesini et al. 2011). The construct of cyberbullying has a unidimensional structure, from which different acts of cyberbullying form a continuum of severity (Menesini et al. 2011). In addition, Wang et al. (2009, 2010, 2012) have shown that there is considerable overlap between bully and victim roles and that cyberbullying and cyber-victimization tend to co-occur with other bullying behaviors. The field currently lacks a psychometrically valid and reliable instrument that measures both traditional and cyberbullying in a comparable way. Statistical techniques such as confirmatory factor analysis must be used to test the validity of bullying scales.

Another area for further investigation is whether the construct of bullying, particularly cyberbullying is equivalent in younger children (e.g., 6–10 years) compared to adolescents (e.g., 11–17 years). Exploratory studies on cyberbullying in children are beginning to emerge (Baas et al. 2013; Mishna et al. 2009), however the developmental appropriateness of including cyberbullying items in scales for children has not been thoroughly examined. This is an important question given that previous research demonstrated significant age differences in the level of understanding of (traditional) bullying, especially in children (Monks and Smith 2006). Future research could examine the developmental progression of bullying behaviors, and specifically whether the two behaviors appear concurrently or whether they occur progressively (and if so, which emerges first). This knowledge can then help to refine current prevention and early intervention programs.

There are many benefits to improving the measurement of bullying behaviors. Firstly, prevalence estimates may be calculated more accurately. Rates for different bullying behaviors can then be properly compared and also used to evaluate the effectiveness of anti-bullying programs. Secondly, more complex interactive models of factors associated with bullying behaviors can be examined. This will enable the field to move beyond examining multiple univariate associations between bullying behaviors and adverse psychosocial outcomes, and test moderating and mediating models of bullying. Overall, the evidence suggests that traditional and cyberbullying are behaviors that are more similar than different, and often co-occur. Therefore, they should be measured simultaneously in global survey items and side- by-side in multi-item scales. However, there is a clear need for further research on issues to do with the role of definitional criteria of bullying and how these components fit together in adolescents' understanding and experiences of both traditional and cyberbullying.

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