

Poor Motor Skills: A Risk Marker for Bully Victimization

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Children who are clumsy are often bullied. Nevertheless, motor skills have been overlooked in research on bullying victimization. A total of 2,730 Swedish adults (83% females) responded to retrospective questions on bullying, their talents in physical education (i.e., coordination and balls skills) and school academics. Poor talents were used as indicators of poor gross motor skills and poor academic skills. A subset of participants also provided information on educational level in adulthood, childhood obesity, belonging to an ethnic minority in school and socioeconomic status relative to schoolmates. A total of 29.4% of adults reported being bullied in school, and 18.4% reported having below average gross motor skills. Of those with below average motor skills, 48.6% were bullied in school. Below average motor skills in childhood were associated with an increased risk (OR 3.01 [95% CI: 1.97–4.60]) of being bullied, even after adjusting for the influence of lower socioeconomic status, poor academic performance, being overweight, and being a bully. Higher odds for bully victimization were also associated with lower socioeconomic status (OR 2.29 [95% CI: 1.45–3.63]), being overweight (OR 1.71 [95% CI: 1.18–2.47]) and being a bully (OR 2.18 [95% CI: 1.53–3.11]). The findings indicate that poor gross motor skills constitute a robust risk-marker for vulnerability for bully victimization. *Aggr. Behav.* 39:453–461, 2013. © 2013 The Authors. *Aggressive Behavior* Published by Wiley-Blackwell

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Keywords: bullying; gross motor skills; cerebellar cognitive affective syndrome; victimization risk

INTRODUCTION

Few childhood problems are believed to cause such long-term harm as peer rejection (Bierman, 2004). Bully victimization can be associated with a range of negative outcomes, including internalizing problems (Arseneault et al., 2006), mental health and self-harm problems (Analitis et al., 2009; Fisher et al., 2012; Sourander et al., 2009), poor adjustment in school (Nansel, Craig, Overpeck, Saluja, & Ruan, 2004) and psychosomatic complaints (Gini & Pozzoli, 2009) with increased use of analgesics (Due, Hansen, Merlo, Andersen, & Holstein, 2007). Although any child could be bullied, there are some key factors known to increase the likelihood of victimization. Recognized risk factors presumed to precede bullying include environmental and social determinants (Jansen, Veenstra, Ormel, Verhulst, & Reijneveld, 2011; Sourander et al., 2009), poor academic achievement (Glew, Fan, Katon, Rivara, & Kernic, 2005; Holt, Finkelhor, & Kantor, 2007) and physical features, such as being overweight (Lumeng et al., 2010). Bullying is also influenced by personality characteristics (Arseneault, Bowes, & Shakoor, 2010; Nordhagen, Nielsen, Stigum, & Kohler, 2005;

Olweus, 1993a) and psychiatric problems (Nordhagen et al., 2005; Sourander et al., 2009).

As the ability to make friends is negatively related to being bullied (Nansel et al., 2001), another important risk

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Contract grant sponsor: Swedish Research Council; contract grant number: 523-2011-3646.

Conflicts of interest: None

Abbreviations: ADHD: attention deficit hyperactivity disorder; SES: socioeconomic status.

Author Contributions: See Acknowledgments for details.

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Received 6 August 2012; Accepted 22 April 2013

DOI: 10.1002/ab.21489
Published online 19 June 2013 in Wiley Online Library (wileyonlinelibrary.com).

factor is poor social skills (Fox & Boulton, 2005). Low rates of prosocial behavior, high rates of aggressive or disruptive behavior, high rates of inattentive immature behavior and high rates of socially anxious or avoidant behavior are all consistently linked to peer rejection (Bierman, Smoot, & Aumiller, 1993). Observations by high school youth about the reasons for bullying link victimization to being different, weak or annoying (Guerra, Williams, & Sadek, 2011). Although “being different” is an unspecific term, being clumsy and ill coordinated is likely to be perceived as being different. Also, being annoying could correspond to as having poor social skills.

There is evidence that gross motor skills and social skills may share a biological basis, involving an area of the brain called the cerebellum (Stoodley & Schmahmann, 2010). This area is involved in coordinating timing and sensorimotor integration (Keele & Ivry, 1990; Salman, 2002) and is often impaired in individuals with ADHD and ASD. Although clumsiness (i.e., poor gross motor skills) can be an isolated phenomenon, among non-clinical populations, signs of poor social skills such as appearing as “socially inept” (Hall, 1988) or nervous (Sigurdsson, Van Os, & Fombonne, 2002) are also more common among clumsy children. Furthermore, university students who describe themselves as having poorer social skills, also report poorer talents in physical education (PE) in school (Bejerot, Edgar, & Humble, 2011), indicative of clumsiness.

Motor skill traits lie along a continuum and are present to a lesser extent in the general population (Henderson & Sugden, 1992). Therefore, we propose that poor motor skills may be a risk factor for bullying within a non-clinical sample. Subtle signs of poorly integrated movements may be markers, perhaps barely noticeable on a conscious level, but nevertheless, inform others that an individual is somewhat “different.” Evolutionary mechanisms have been suggested to play an important role for bullying mechanisms (Volk, Camilleri, Dane, & Marini, 2012). Bullies are often psychologically and physically stronger than victims (Juvonen, Graham, & Schuster, 2003). Susceptible individuals, such as those that signal submission or fragility, may be at increased risk for becoming bullied by children who strive for dominance (Bierman et al., 1993).

A large recent study on motor skills in 8-year olds compared children with severely low gross motor skills (below the 15th centile) to children with stronger skills. The subgroup reported significantly more often that they were frequent bully victims compared to the controls (Lingam et al., 2012). Furthermore, children with low gross motor skills also showed

greater hyperactivity, inattention, emotional problems, peer relationship difficulties, and fewer prosocial skills. In studies on healthy professionals and university students, using retrospective self-reports, associations were found between poor performance in PE at 10–12 years of age and bully victimization (Bejerot & Humble, 2007; Bejerot et al., 2011). Reversely, a study including 982 children showed that superior motor skills predicted future bullying (Jansen et al., 2011). Children who performed above average according to retrospective parent reports in preschool were more likely to be nominated by peers at age 11 as being bullies and less likely to be nominated as victims (Jansen et al., 2011). However, these studies on bullying and motor skills have been limited by small sample sizes (Bejerot et al., 2011; Piek, Barrett, Allen, Jones, & Louise, 2005), pilot study settings (Bejerot & Humble, 2007) or addressed severe motor skills deficits in clinical populations (Bejerot & Humble, 2013; Lingam et al., 2012; Piek et al., 2005).

Researchers have sought to understand factors increasing an individual’s vulnerability to bully victimization. Although poor social skills are a potentially modifiable risk factor, increases in skillful behavior do not necessarily increase peer acceptance (Bierman, Miller & Stabb, 1987). Also, poor motor skills are observable at an earlier age than poor social skills (Teitelbaum et al., 2004). Hence, if poor motor skills are predictive of bully victimization, it would be possible to use them to identify vulnerable children at an early age and support them. However, the relationship between motor skills and bullying is currently unclear, and their relative importance compared to other acknowledged risk factors for childhood bully victimization is also unknown.

The aim of the present study is twofold; (a) we want to investigate in a non-clinical population, whether poor gross motor skills as assessed by self-rated motor talents in childhood are associated with bully victimization and bullying, and (b) to assess the impact of gross motor skills on the likelihood for victimization when the influence of other known risk-factors are taken into account. We hypothesized that poor gross motor skills would predict bully victimization, even after accounting for other known risk factors.

METHOD

Participants and Procedure

A total of 2,730 adults completed questionnaires while attending a course on psychiatric disorders and mental health. Participants were education, community, local government, and health sector professionals (2,161 women and 439 men) aged 18–75 years old

(mean age 45 ± 10.9). The lectures (held by the first author, SB) were held on 21 different occasions throughout Sweden from September 2007 until February 2012. On each occasion between 39 and 213 participants attended.

During the course of the day attendees were invited to participate in the study by responding anonymously to a short questionnaire. They were informed that the aim was to collect data on school experiences, from a community population, which they themselves represented. In recognition of their contribution, participants received the chance to win a book by signing the questionnaire with a self-chosen code. After the questionnaires were completed, the lottery was performed later that day. The participation rate was above 95% at all occasions. The topics of bullying, motor skills and academic performance were not addressed in the lectures until after participants had completed questionnaires.

Measures

Between September 2007 and May 2009, participants ($N = 1,706$) were asked to sign a plain piece of paper with a self-chosen code and number each response. Information on age, sex, and profession was requested. Then participants were asked to remember their own past and reply to four questions that were simultaneously shown on a slide show and read out loud by the author. As an indication of gross motor skills, "Were you regarded as talented in PE at 10–12 years of age (i.e., regarding motor smoothness, coordination, ball skills)?" As an indication of academic achievement, "Were you regarded as academically talented in school at 10–12 years of age?" Response alternatives to both questions were "Yes, above average; About average; No, below average." Then, a definition of bullying was presented "*A person is bullied when he or she is exposed, repeatedly and over time, to negative actions on the part of one or more other persons. Bullying can either be direct or indirect*" (Olweus, 1993a). To examine bullying perpetration and victimization, participants were asked: "Where you bullied at school?" and "Did you bully others in school?" Both bullying items had response alternatives of "Yes, to a large extent; Yes, a little; No."

From June 2009 to February 2012, participants ($N = 1,025$) completed a paper- and pen questionnaire. In addition to the previous items, this questionnaire also included items about the duration of bullying, if participants were overweight as a child (response options of: "Yes, to a large extent; Yes, a little; No"), if they belonged to an ethnic minority group in their school, or if participants were substantially poorer than their school-

mates (the questionnaire is shown in the Appendix). Ethics approval was provided by the Regional Ethics Committee in Stockholm although according to the Swedish law, research methods that do not carry any risk of harm to the participant, such as the use of anonymous self-rated questionnaires, do not require a formal ethical approval.

Statistical Analysis

Firstly, participants who reported having been bullied in school were allocated to a "bullied group," while participants who had not been bullied at all were allocated to a "non-bullied group." In both cases, this was regardless of whether they had been bullies themselves or not. Responses to bullying perpetration were dichotomized to reflect categories of "no" versus "a little or to a large extent." Then, a four category variable was formed that indicated participants' status as a victim, bully victim, bully or bystander (neither bully nor victim).

Responses for motor skills and academic talents in childhood were then dichotomized to represent categories of "below average" versus "average or above average." Responses for being overweight were also dichotomized to represent categories of "not overweight" versus "slightly or markedly overweight."

A series of chi-square analyses were performed to examine rates of bullying behavior and poor gross motor skills. A Spearman's rank correlation was used to examine the association between bullying duration and the ordinal measure of motor skills. Unadjusted logistic regressions were performed to determine the bivariate relationships that poor gross motor skills and each covariate shared with being bullied. Then, an adjusted logistic regression was performed to examine the influence of poor gross motor skills on being bullied after accounting for the influence of key risk factors. Covariates that showed non-significant bivariate associations with bullying victimization were not included in the multivariate model.

For each variable, less than 5% of cases were missing data and so listwise deletion was used. Statistica version 10 (StatSoft, Inc.) was used for all of the analyses, with the exception that SPSS version 19 was used for the multivariate logistic regression.

RESULTS

Sample Characteristics

Of participants with demographic information available, 5.68% reported belonging to an ethnic minority within their school and 10.02% had lower SES compared to their schoolmates. In addition, 10.39% of participants

TABLE I. Sample Characteristics

Risk factor	Category	Not bullied, <i>n</i> (%)	Bullied, <i>n</i> (%)	χ^2	<i>P</i>
Sex (<i>n</i> = 2,600)	Male	312 (71)	127 (29)	.006	.94
	Female	1,532 (71)	629 (29)		
Ethnic minority (<i>n</i> = 969)	Yes	30 (58)	22 (42)	2.69	.10
	No	629 (69)	288 (31)		
Low SES (<i>n</i> = 948)	Yes	46 (48)	49 (52)	19.4	<.001
	No	602 (71)	251 (29)		
Poor academic talents (<i>n</i> = 2,723)	Yes	156 (55)	127 (45)	36.6	<.001
	No	1,767 (72)	673 (28)		
Overweight (<i>n</i> = 1,020)	Yes	98 (56)	78 (44)	15.7	<.001
	No	599 (71)	245 (29)		
Being a bully (<i>n</i> = 2,725)	Yes	392 (63)	231 (37)	22.7	<.001
	No	1,531 (73)	571 (27)		
Poor motor skills (<i>n</i> = 2,728)	Yes	258 (52)	243 (49)	107.4	<.001
	No	1,663 (75)	558 (25)		

Note. All chi-square analyses, *df* = 1.
SES, socioeconomic status.

reported having low academic talents and 17.25% as being overweight as a child. A higher proportion of participants with low SES reported being bullied compared to those with higher SES (see Table I). Similarly, participants who reported having low academic talents or being overweight showed higher rates of bully victimization than participants with higher academic talents or who were not overweight (see Table I).

Rates of Bully Behavior and Motor Skills

Bully victimization in childhood was reported by 29.1% of participants, with no difference in rates between males and females (see Table I). Of those reporting having been bullied, 71.3% of participants were pure victims, whereas 28.7% were bully victims. Furthermore, 71.2% were bullied during a time period of 1–3 years; 20.6% were bullied for 2–6 years; and 8.1% were bullied for more than 5 years.

In total, 18.6% of participants reported below average motor skills, males less so than females (12.8% and 19.8%, respectively; *n* = 2,598; $\chi^2 = 12.02$; *df* = 1; *P* < .001). Of those with poor motor skills, 48.5% were victims of bullying, compared to 25.2% of participants with at least average motor skills ($\chi^2 = 107$; *df* = 1; *P* < .001). In males this association was even more prominent as 57.1% of males with poor motor skills were bullied compared to 24.8% of those with average or

above average motor skills ($\chi^2 = 25$; *df* = 1; *P* < .001). For females 47.0% of those with poor motor skills and 24.7% with average or above average motor skills were bullied ($\chi^2 = 82$; *df* = 1; *P* < .001). A weak positive correlation was observed between duration of bullying and poorer motor skills (*r* = .16; *P* < .001). As shown in Table II, pure victims, followed by bully victims showed higher rates of low gross motor skills than pure bullies and bystanders.

Bullying perpetration was reported by 22.9% of participants, with higher rates among males (37.4%) than females (23.0%) $\chi^2 = 61.7$; *df* = 1; *P* < .001). Of those reporting bullying, 63.0% were pure bullies (males 62.2%; females 64.5%), and 37.0% were bully victims (males 37.8; females 35.5%; ns). Of the pure bully group, 86.2% reported average or superior motor skills, whereas only 13.9% reported poor motor skills, compared to 32.4% in the pure victims (Table II).

Unadjusted Associations Between Poor Motor Skills, Covariates and Bullying Victimization

As shown in Table III, poor gross motor skills were associated with an increased risk of bullying victimization. The following covariates were also associated with an increased likelihood of victimization: low socioeconomic status, poor academic talents, being overweight and bully perpetration. Gender and belonging to an ethnic

TABLE II. Bullying Status in Childhood in Relation to Gross Motor Skills

Bully status	<i>N</i> = 2,718	Average or above average, %	Poor motor skills, %
Pure bully	390	86.15	13.85
Bully victim	229	74.67	25.33
Pure victim	571	67.60	32.40
Bystander	1,528	86.71	13.29

Note. $\chi^2 = 113.9$; *df* = 3; *P* < .001. Missing data, *n* = 12.

TABLE III. Predicting Being Bullied From Poor Motor Skills and Risk Factors

Risk factors	Adjusted model odds ratio (95% CI)	P	Adjusted model odds ratio (95% CI)	P
Poor motor skills (<i>n</i> = 2,728)	2.80 (2.30–3.42)	<.001	3.01 (1.97–4.60)	<.001
Low socioeconomic status (<i>n</i> = 948)	2.56 (1.66–3.92)	<.001	2.29 (1.45–3.63)	<.001
Poor academic talents (<i>n</i> = 2,723)	2.14 (1.66–2.75)	<.001	1.18 (0.92–1.50)	.19
Overweight (<i>n</i> = 1,020)	1.95 (1.40–2.71)	<.001	1.71 (1.18–2.47)	<.001
Being a bully (<i>n</i> = 2,725)	1.58 (1.31–1.91)	<.001	2.18 (1.53–3.11)	<.001
Ethnic minority (<i>n</i> = 969)	1.60 (0.93–2.77)	.11	—	
Sex, male (<i>n</i> = 2,600)	1.01 (0.44–2.30)	.94	—	

Note. Adjusted model, *n* = 932.

minority showed no significant bivariate associations with bully victimization.

Adjusted Associations Between Covariates and Bullying

The multivariate logistic regression showed that participants reporting poor motor skills were three times more likely to have experienced bullying victimization than those with stronger motor skills (see Table III). Low SES relative to peers, being overweight and bully perpetration were also associated with an increased risk of bully victimization. Poor academic talents showed no significant relationship with victimization when the effect of poor motor skills and other covariates were taken into account.

DISCUSSION

The current study examined associations between gross motor skills as assessed by self-rated talent and bullying behavior during childhood. As expected, poor gross motor skills were associated with a greater likelihood of bullying victimization, with approximately one out of two participants reporting poor motor skills, also reporting being bullied in childhood. Furthermore, poorer motor skills were associated with a longer duration of bullying. They represented a threefold increased risk for bully victimization, above and beyond the effects of other important childhood risk factors. Consistent with previous research, low SES, being overweight and being a bully were also predictive of victimization.

The current findings are consistent with previous studies that showed links between a history of poor motor skills in childhood and bully victimization among university students (Bejerot et al., 2011) and among psychiatric patients (Bejerot & Humble, 2013). We extended our understanding of this association by examining a more representative sample of adults and demonstrated the relative influence of poor motor skills when compared to other risk factors. Furthermore, as this association was even stronger among males than females, poor motor skills may be a stronger risk marker for males.

The current findings regarding having average or above motor skills and being a bully, or having less likelihood of being a victim is also consistent with a previous study (Jansen et al., 2011). This is in accordance with the explanatory model of evolutionary mechanisms that serve as initiators and maintenance forces behind bullying behaviors. The findings were also consistent with earlier studies, showing that being overweight (Lumeng et al., 2010), having low SES status (Analitis et al., 2009; Jansen et al., 2011) and being a bully (Juvonen et al., 2003) are important factors to consider when understanding bullying victimization.

However, neither self-reported academic talent nor ethnicity was associated with victimization in the present study. The non-significant relationship between academic skills and being bullied may be because the current sample (of professionals) did not represent a population with a particular “educational risk,” for example, children who failed school. In relation to ethnicity, a majority of ethnic minorities in Sweden live in certain neighborhoods and “ethnic Swedes” in others, thus few participants fell into the “relative ethnic minority” category. This highlights the importance of examining the interplay between the immediate social context and bullying.

Several interpretations of the association between poor gross motor skills and bullying victimization are possible. We do not suggest that poor motor skills per se cause bullying. The link between poor motor skills and being perceived as “different” from the majority may have a biological explanation relating to the cerebellum, a region of the brain involved in motor control. The cerebellum contributes to coordination and exactness, but also accurate timing, and calibrating sensorimotor information from other brain areas (Ivry, Spencer, Zelaznik, & Diedrichsen, 2002; Spencer, Ivry, & Zelaznik, 2005).

Social skills require motor skills because social interactions involve fine-tuned cerebellar functions, as timing and turn taking during conversation. Most communication between people is in fact non-verbal body language. When movements are poorly integrated or motor responses are not accurately tuned to the social situation, the person can be considered by others as

socially inept. Poor timing and impaired sensorimotor integration may lead to slight deviations in facial expressions, gaze, postures, gestures, gait, prosody, voice pitch, etc., that are perceived by others as “awkward” and thus result in rejection and peer victimization. This is in accordance with the most frequent reason cited by youth for persons being bullied: “They didn’t fit in” (Hoover, Oliver, & Hazler, 1992; Hoover, Oliver, & Thomson, 1993). This may relate to biological links observed in clinical populations between gross motor skills and social skills (Reiersen, Constantino, & Todd, 2008). This is also consistent with evolutionary mechanisms where fragile individuals are at increased risk for becoming bullied by children who strive for dominance (Volk et al., 2012).

When considering implications of the current findings, it is worth noting that poor motor skills are observable early during childhood, which enables the possibility of early interventions. Although deficits in social and motor skills often co-exist (Diamond, 2000), programs for motor skill training are presumably less complex to implement than those that specifically aim to improve social skills. Physical exercises have been shown to improve motor skills and physical strength in clumsy children (Schoemaker, Hijlkema, & Kalverboer, 1994) and may enhance executive functions (Best, 2010). However, whether such training also would affect social skills and self-confidence, qualities presumably protective against peer victimization, is presently unknown. Also, to train motor skills individually or in a group is probably less stigmatizing for the child than attending a group specifically aimed for social skills training.

The current study examined associations between motor skills and bullying victimization using a large non-clinical sample of adults and it accounted for important risk factors. Nevertheless there were several limitations that should be considered when interpreting the findings.

The retrospective study design has both pros and cons. Bullied children tend to not fully acknowledge the bullying at the time (Stockdale, Hangaduambo, Duys, Larson, & Sarvela, 2002; Taylor, Wood, & Lichtman, 1983; Theriot, Dulmus, Sowers, & Johnson, 2005), possibly because of the threat bullying poses to an individual’s self-image, including the risk of social exclusion from the peer group. An advantage of adult retrospective reports is that these concerns are less of a problem because adults are more likely to be emotionally and physically distanced from these distressing childhood events and also able to identify an event as “bullying.”

Although, some have questioned the reliability and validity of adult retrospective reports, there is increasing evidence that adults can accurately recall important events from childhood (Brewin, Andrews, & Gotlib, 1993; Rivers, 2001). A review of retrospective studies

concluded that the unreliability of retrospective reports of problem behaviors from childhood have been exaggerated (Brewin et al., 1993). Memories that hold personal significance are of an emotional nature and that are based within a significant period of life, often within the second decade, are more likely than others to be recalled (see Rivers, 2001; Smith et al., 2003 for a review). In relation to bullying, moderate to strong retest reliability has been observed in adult recall of childhood bullying (Boulton, 2013; Rivers, 2001; Strawser, Storch, & Roberti, 2005). Furthermore, Olweus (1993b) found consistency between adolescent reports of bullying and retrospective reports in young adulthood. However, more distal memories, such as consequences (Rivers, 2001) or precise details, such as the sequencing of specific events (Berscheid, 1994) are recalled less well.

As the current study examined emotion provoking, general memories of bullying (Yancura & Aldwin, 2009), the sound reliability and validity of the current responses is likely. Furthermore, the main concern of this nature is the underreporting of negative childhood experiences, which would attenuate associations (Hardt & Rutter, 2004). However, given the strength of the relationship and that the current prevalence rates reflect those observed in other studies (Analitis et al., 2009; Branson & Cornell, 2009; Jansen et al., 2011; Nansel et al., 2001), this is unlikely to be a major concern.

Another possible limitation was that a validated rating scale for examining bullying was not used. The participants were presented with a definition of bullying and presumably people know if they were bullied in school or not and this is an approach that has been accepted in large influential studies (Fisher et al., 2012; Nansel et al., 2001). Furthermore, established rating scales tend to address more detailed aspects of bullying events, such as the type of bullying or frequency at specific time points. However, given that the recall of such details may be problematic decades after they occur and were not the focus of this study, this approach was not used.

In regard to the current measure of motor skills, a self-report of talent in PE was used as a proxy for having generally poor gross motor skills. Individuals tend to be aware of having substantially poorer gross motor skills, especially since students in Swedish schools engage in at least a few hours of PE each week. Importantly, it is likely that associations between bullying victimization and poor motor skills would be even stronger among individuals with serious gross motor deficits. Nevertheless, future research should aim to replicate the current study using objective reports, such as physical examination and clinical assessments.

The current study extended current knowledge by examining the relationship between poor gross motor skills and bullying in a non-clinical population. However,

the generalizability of the findings may be limited by the sampling method employed. The current sample included healthcare, community work, and local government workers, with the majority being female. The gender ratio reflects the over-representation of females in these fields and also that females more readily respond to surveys on bullying than males (Holt, Kantor, & Finkelhor, 2009). The relationship between poor motor skills and bullying may in fact be stronger for males (as was observed in the current study) or among individuals with more serious gross motor problems and with less resources (due to employment and education opportunities). However, the overall nature of this association is not expected to differ substantially between the current sample and the wider adult population.

CONCLUSIONS AND SUMMARY

This study showed a strong association between bully victimization and poor gross motor skills in childhood, as reported retrospectively by a large cohort of adults. We suggest that poor motor skills in childhood are reflected as impaired turn taking and awkward body language, possibly only noticeable at a sub-liminal level. The impairment as such is likely to be perceived by peers as being different, awkward or not fitting in and can lead to rejection. Prevention programs against bullying could gain from focusing on how to detect and protect children at risk. Possible implications of this study are prospective controlled trials of interventions using specialized PE programs for children with poor coordination, and to test if these interventions reduce future risk of being bullied. Future research using more objective measures and a more representative sample of the general population are also needed to replicate and further validate the current findings.

ACKNOWLEDGMENTS

Financial support was provided through the regional agreement for support for research between Stockholm County Council (ALF) and Karolinska Institutet, Stockholm, Sweden and S.B. received grants from the Swedish Research Council (No. 523-2011-3646).

Author Contributions: Susanne Bejerot designed the study and drafted the initial manuscript. She wrote the paper together with the co-authors and gave final approval to the submitted manuscript. Alice Humble interpreted the data, wrote the paper together with the co-authors and gave final approval to the submitted manuscript. Mats B. Humble assisted with statistical analyses, reviewed and revised the manuscript and gave final approval to the submission. Stephanie Plenty co-authored the paper at revision.

APPENDIX

Questionnaire Used to Assess Motor Skills, Academic Skills and Bullying

1. Are you male or female? (Circle)
2. How old are you? _____
3. Here are a few questions about your school:
Were you regarded as academically talented in school at the age of 10–12 years?
A. Yes, above average
B. No, below average
C. About average
4. Were you regarded as talented in PE (i.e., motor smoothness, well coordinated, good ball skills) at the age of 10–12 years?
A. Yes, above average
B. No, below average
C. About average
5. Bullying is defined as: *A person is bullied when he or she is exposed, repeatedly and over time, to negative actions on the part of one or more other persons. Bullying can either be direct such as hitting, but can also be psychological, e.g. by exclusion from the peer group.*
Did you bully others in school?
A. Yes, to a large extent
B. Yes, a little
C. No
6. Where you bullied at school?
A. Yes, to a large extent
B. Yes, a little
C. No
7. If you were bullied at school, during which time span did it occur?
A. In nursery school
B. In school (7–9 years old)
C. In school (10–12 years old)
D. In school (13–15 years old)
E. In school (16–19 years old)
8. Were you overweight when you were 10–12 years?
A. Yes, to a large extent
B. Yes, a little
C. No
9. Did you belong to an ethnic minority in your school?
A. Yes
B. No
C. I don't know

10. Was your family worse off economically than your classmates' families when you were 10–12 years of age?

- A. Yes
- B. No
- C. I don't know

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