Tampere University

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Transgender Identification in Adolescent Population. Sexuality, Suicidality, and Involvement in Bullying.

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ACADEMIC DISSERTATION
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Abstract

Gender identity has become a hot topic both in research as well as in public discussion in the past twenty years. Simultaneously, referrals of adolescents experiencing gender dysphoria to gender clinics have greatly increased.

Adolescents referred to gender clinics present with psychiatric comorbidity while transgender adolescents in population-based samples report adversities in many aspects of life.

These adversities are often attributed to so-called external stressors, factors that relate to how others perceive and treat transgender individuals. However, the currently available research is somewhat flawed as many studies have not been able to consider confounding by these very factors.

This study uses two data sets with unselected samples of Finnish adolescents. The first data set is from the biennial School Health Promotion Study, which is a cross-sectional study designed to examine the health, health behaviors, and school experiences of 8th and 9th grade adolescents in the compulsory comprehensive school and second-year students in vocational and upper secondary schools. The second data set is from the Adolescent Mental Health Cohort and Replication study, which is a mental health survey among 9th grade students of the mandatory comprehensive school, designed to produce epidemiological data on adolescent mental health.

Associations between transgender identity and severe suicidal ideation, bullying involvement, and normative and negative sexual experiences were examined.

The results show that transgender identity was associated with severe suicidal ideation and that peer rejection variables did not play a significant role in explaining severe suicidal ideation in this population.

Transgender identity was generally associated with being bullied, and the associations were stronger among the late adolescents in the sample. Additionally, non-binary identity was associated with bullying others. The results corroborate previous research, but additionally suggest that perhaps those transgender adolescents who are still involved in bullying in late adolescence, especially non-binary individuals, are the ones facing most developmental challenges.

Regarding sexuality, the transgender adolescents in our sample presented neither with excessive nor scarce romantic and sexual experiences, thus suggesting that transgender identity need not interfere with normative sexual development. In crude estimates, transgender identity was first associated with subjection to sexual coercion as well as perpetration of dating violence. However, these associations leveled out after depression was controlled for, suggesting that depression plays a larger role than the gender identity itself in the health and well-being of the transgender adolescents.

The study findings are discussed in light of adolescent development and implications for practice and future research are suggested. In conclusion, developing adolescents need to be allowed sufficient time to explore their gender identity and this exploration does not automatically indicate the need for interventions. In future, longitudinal studies are needed to fully

understand how transgender identity affects the onset of various adversities experienced by transgender adolescents.

Tiivistelmä

Sukupuoli-identiteetti on viimeisen kahdenkymmenen vuoden aikana ollut lisääntyvissä määrin sekä tutkimuksen, että julkisen keskustelun kohteena. Samalla sukupuoliahdistuksesta kärsivien nuorien lähetemäärät sukupuoli-identiteettiklinikoille ovat olleet kasvussa.

Sukupuoli-identiteettiklinikoille ohjautuneet nuoret kärsivät usein samanaikaisista mielenterveyden ongelmista. Väestöpohjaisten kyselytutkimuksien perusteella transgender-identifioituvat nuoret vaikuttavat kärsivän ongelmista lukuisilla elämän osa-alueilla huomattavasti valtavirtaa edustavia ikätovereitaan enemmän.

Näiden ongelmien ajatellaan usein liittyvän erilaisiin syrjinnän ja kiusaamisen muotoihin, eli niin sanottuihin ulkoisiin stressitekijöihin, kuten vähemmistöstressiteoriassa esitetään. Aikaisempi tutkimustieto on kuitenkin vähemmistöstressin osalta puutteellista. Monissa tutkimuksissa ei ole otettu huomioon vähemmistöstressin vaikutuksia tutkittaessa transgender-nuorien ja heidän ikätovereidensa välisiä terveyseroja.

Tässä tutkimuksessa käytetään kahta valikoitumattomaan väestöön perustuvaa aineistoa. Ensimmäinen aineisto on THL:n Kouluterveys-kysely. Kouluterveys-kysely on poikkileikkaustutkimus, jossa kartoitetaan 8.- ja 9.-luokkalaisten sekä lukion ja ammattikoulun toisen luokan opiskelijoiden terveyttä, terveyskäyttäytymistä ja kokemuksia

koulumaailmasta. Tutkimuksen toinen aineisto on 9.-luokkalaisten mielenterveyttä kartoittavasta poikkileikkaustutkimuksesta, Nuorten mielenterveys kohortti- ja replikaatiotutkimus.

Tutkimuksessa selvitettiin transgender-identiteetin yhteyttä vakavaan itsetuhoiseen ajatteluun, kiusaamisosallisuuteen sekä normatiivisiin että negatiivisiin seksuaalisiin kokemuksiin.

Tuloksien perusteella transgender-identiteetti assosioitui vakavaan itsetuhoiseen ajatteluun, ja ikätoverisuhdemuuttujat eivät selittäneet itsetuhoisuutta tässä väestössä.

Transgender-identiteetti assosioitui kiusatuksi tulemiseen, ja tämä yhteys oli voimakkaampi aineiston myöhäisnuorien keskuudessa. Lisäksi nonbinäärinen identiteetti oli yhteydessä muiden kiusaamiseen. Tulokset vahvistavat aiempaa tutkimustietoa, mutta viittaavat myös siihen, että edelleen myöhäisnuoruudessa kiusaamiseen osallistuvat transgender-nuoret, etenkin nonbinääriseksi identifioituvat, saattavat edustaa kehityksellisisistä haasteista kärsiviä nuoria.

Normatiivisten romanttisien ja eroottisien kokemuksien osalta transgender-nuoret eivät eronneet valtavirtaa edustavista ikätovereistaan. Tuloksien perusteella transgender-identiteetti ei vaikuta asettavan haasteita seksuaaliselle kehitykselle nuoruusiässä. Alustavissa monimuuttuja-analyyseissä transgender-identiteetti assosioitui seksuaalisen pakottamisen kokemuksille uhrina sekä parisuhdeväkivallalle tekijänä. Nämä yhteydet kuitenkin katosivat, kun masennusmuuttuja kontrolloitiin analyyseissä. Tulos viittaa siihen, että masennus on voimakkaasti transgender-nuorien hyvinvointiin vaikuttava ongelma.

Tutkimustuloksista keskustellaan nuoruusiän kehityksen valossa. Ehdotuksia koskien nuorten kanssa työskenteleviä ammattilaisia sekä tutkijoita esitetään. Yhteenvetona voidaan sanoa, että kehittyvä nuori tarvitsee riittävästi aikaa ja tilaa sukupuoli-identiteettinsä tutkimiseen, eikä tämä tutkiminen automaattisesti viesti nuoren tarpeesta saada lääketieteellistä apua. Tulevaisuudessa tulisi pyrkiä selvittämään pitkittäistutkimuksien avulla transgender-identiteetin ja tämän populaation kokemien ongelmien yhteys.

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List of original publications

I Heino, E., Fröjd, S., Marttunen, M., Kaltiala, R. (2021). Transgender identity is associated with severe suicidal ideation among Finnish adolescents. *International Journal of Adolescent Medicine and Health*, 2021 Aug 24. Epub ahead of print. doi: 10.1515/ijamh-2021-0018.

II Heino, E., Ellonen, N., Kaltiala, R. (2021). Transgender Identity Is Associated With Bullying Involvement Among Finnish Adolescents. *Frontiers in Psychology*, 11:612424.

III Heino, E., Fröjd, S., Marttunen, M., Kaltiala, R. (2020). Normative and negative sexual experiences of transgender identifying adolescents in the community. *Scandinavian Journal of Child and Adolescent Psychiatry and Psychology*, 8:166-175.

Personal contribution

The author of this thesis planned each original publication, including statistical analyses, with the co-authors. For data analysis, the help of a statistician was used. The author interpreted the results of the statistical analyses together with the co-authors. The author had the main responsibility for each original publication, including writing the manuscripts, corresponding with the journals, and revising the manuscripts. The author conducted the literature reviews for the original publications and this dissertation. Finally, the author wrote this dissertation.

Abbreviations

AMHCHR	Adolescent Mental Health Cohort and Replication Study
CI	confidence interval
DSM	Diagnostic and Statistical Manual of Mental Disorders
FSH	follicle-stimulating hormone
GAD-7	General Anxiety Disorder-7
GMSR	gender minority stress and resilience measure
GnRH	gonadotropin-releasing hormone
HPA	hypothalamic-pituitary-adrenal (axis)
ICD	International Classification of Diseases
LH	luteinizing hormone
LGB	lesbian, gay, bisexual
LGBTQ	lesbian, gay, bisexual, transgender, queer or questioning
OR	odds ratio
R-BDI	Finnish version of the Beck Depression Inventory
SD	standard deviation
SHPS	School Health Promotion Study
THL	The National Institute for Health and Welfare)
WHO	World Health Organization

Introduction

In the late 2000's and early 2010's, the so-called "Dutch approach" (Cohen-Kettenis et al., 2011), described originally in 1998 (Cohen-Kettenis & Van Goozen, 1998), prevailed as the standard of care for gender dysphoric adolescents in many countries, and was formalized into guidelines published by the World Professional Association of Transgender Health in 2012 (Coleman et al., 2012). Simultaneously, referrals of adolescents with features of gender dysphoria to specialized gender clinics saw an upsurge (De Vries et al., 2011; Kaltiala et al., 2020; Wood et al., 2013).

In the "Dutch approach", puberty blocking hormones are prescribed in early adolescence to avoid exposure to unwanted physical changes induced by pubertal hormones, followed by cross-sex hormones and finally, consideration of gender reassignment surgery at the age of 18 (Cohen-Kettenis et al., 2011).

In a more recent turn of events, the type and extent of care gender dysphoric adolescents need and should receive has sparked a debate among researchers and clinicians (e.g. Block (2023); de Vries (2023); Levine et al. (2022)).

Especially in the US, so-called gender affirming care has emerged as the standard. This has led, for example, to prescribing puberty blockers in some cases as soon as after the first visit to a gender clinic (Block, 2023; Shrier, 2020).

In contrast to the US, some European countries have begun to pump the brakes on medical treatment of gender dysphoric adolescents due to uncertainty of the scientific evidence. For example, in England, gender identity services are halted pending an independent review (Cass, 2022). In Sweden, the National Board of Health and Welfare concluded that the risks associated with the use of puberty blockers and hormones "currently outweigh the possible benefits" (Socialstyrelsen: National Board of Health and Welfare, 2022). Similarly in Finland, the Council for Choices in Health Care recommends psychosocial support as the primary treatment (Palveluvalikoima: Council for Choices in Health Care in Finland, 2020).

At the same time, research interests were directed to gender identity experiences in population samples. It has been suggested that the prevalence of transgender identity may be rising among general population (Zucker, 2017). As to how these individuals compare to their gender minority, treatment seeking peers or cisgender age mates is largely unknown. This dissertation aims to answer this very question using two unselected samples of Finnish adolescents.

1 Review of the literature

1.1 Adolescence

1.1.1 Definition of Adolescence

At the beginning of the 1900's, G. Stanley Hall, the first president of the American Psychological Association, defined adolescence as a period of development between 14 and 24 years of age (Hall, 1904). Since then, parties such as the World Health Organization and the UN Convention on the Rights of the Child, have defined adolescence approximately as the period from 10–20 years of age (Sawyer et al., 2018). The beginning of adolescence is marked by accelerating biological growth while the end is traditionally defined according to shifts in social roles, such as starting a family or reaching economic independence. Especially in industrialized countries, the traditional pathway of social role shift from adolescence into adulthood has evolved and simultaneously been delayed, thus it is reasonable to consider modern adolescence to span ages 10 to 24 (Sawyer et al., 2018).

1.1.2 Puberty

Puberty is a complicated developmental cascade triggered by an increase in hormone secretion, resulting in biological and physical changes and reproductive maturity (Vijayakumar et al., 2018).

Puberty commences with adrenarche, or the process of androgen secretion from the adrenal glands, resulting in the development of some of the secondary sex characteristics, such as hair growth and body odour (Havelock et al., 2004). Adrenarche occurs between the ages of 6 and 9 (Vijayakumar et al., 2018) and continues until the early 20's (Havelock et al., 2004).

In the second phase, gonadarche, the hypothalamus releases gonadotropin-releasing hormone (GnRH), which in turn activates the hypothalamic-pituitary-gonadal axis (HPA) (Ojeda et al., 2006). This prompts the pituitary gland to release follicle stimulating hormone (FSH) and luteinizing hormone (LH). FSH and LH then stimulate the ovaries and the testicles to produce sex hormones, such as estrogen and testosterone. It is these sex hormones that drive further the development of the primary sex characteristics as well as some of the more prominent secondary sex characteristics, such as breast development in females and voice change in males, and finally, reproductive maturity. (Vijayakumar et al., 2018). Both boys and girls reach gonadarche at around the same age, witnessed by the first external changes – breast buds in girls and testicular growth in boys – at around 11 years of age. However, reproductive maturity wise, girls reach menarche slightly earlier than boys reach first ejaculation, about 12–13 vs. 13–14 years of age (Patton & Viner, 2007).

1.1.3 Socio-emotional development in adolescence

"Developmental tasks" refer to certain milestones of development that should be achieved within a specific developmental stage, such as adolescence. They are subconscious processes that arise from interactions between physical development, personal attributes, and societal expectations. The developmental tasks were first formulated by Havighurst (1972), and are as follows: accepting one's body,

adopting a feminine or masculine role (i.e., gendered role) in society, achieving emotional independence from parents, developing close relationships with peers of same and opposite sex, preparing for an occupation, preparing for marriage and family life, establishing personal values or an ethical system, and achieving socially responsible behaviour. Havighurst's theses, even though from the 1940's, remain viable in modern society, at least in western countries (Seiffge-Krenke & Gelhaar, 2008). Adopting a masculine or feminine (i.e., gendered) role poses a challenge for transgender adolescents, especially those with non-binary identity that may lie outside the traditional spectrum of male-female sex, or even fluctuate over time.

Adolescence is the second most important period of brain development (Hermanson & Sajaniemi, 2018). During this period, different regions of the brain mature at different rates (Steinberg, 2005). As a result, it seems adolescence is a period when affective experiences and the ability to control arousal and motivation work in disjunction (Hermanson & Sajaniemi, 2018; Steinberg, 2005). During this period of increased vulnerability, adolescents are more susceptible to the development of mental health problems (Hermanson & Sajaniemi, 2018; Solmi et al., 2022).

Additionally, during adolescence, when the formation of peer relations is of utmost importance (Laursen & Hartl, 2013), the adolescent brain is more susceptible to positive and negative cues related to social acceptance or rejection in social interactions (Dalgleish et al., 2017; Somerville, 2013). As the brain regions responsible for emotional and behavioral regulation have yet to be matured, peer relations influence the adolescent's behavior significantly.

1.1.4 Sexual development in adolescence

Sexual development is another major area of development in adolescence. As the reproductive organs develop into what they essentially are for the remainder of one's life, hallmarks of "adult" sexuality begin to emerge. These hallmarks include sexual desire, sexual arousal, sexual behaviours, and sexual function (Fortenberry, 2013).

As discussed earlier, adolescence is a time of vulnerability, as key parts of the brain related to arousal and reward-seeking behaviour mature in advance of the brain regions responsible for the regulation of emotions and behavior. Thus, even though adolescents reach the capability of reproduction and adult-like sexual interactions some years after the onset of puberty, they may not yet emotionally be ready for such experiences. In support of this, early sexual experiences inappropriate to the developmental phase of the adolescent have been associated with adverse outcomes such as antisocial behavior, experiences of sexual abuse (Kastbom et al., 2015) and depression (Savioja et al., 2015).

On the other hand, the accumulation of sexual experiences and simultaneous progression from less to more intimate encounters are considered a part of normative development during the adolescent years (Cacciatore et al., 2019; Dalenberg et al., 2018).

In early adolescence, adolescents begin to take a more pronounced interest in the opposite sex and start to socialize in mixed-sex groups (McMaster et al., 2002). The earliest forms of dating – "going steady" – also emerge during this period, although relationships during this period may be more centered towards the self and social status than the needs of the partner (Sanders, 2013). In middle and late adolescence, feelings of having a crush or being in love as well as mutually satisfactory

relationships become more common (Cacciatore et al., 2019). Simultaneously, the nature of sexual encounters progresses from holding hands, hugging, and kissing to petting and eventually intercourse (Dalenberg et al., 2018; De Graaf & Rademakers, 2011), a rare experience among early adolescents but not among late adolescents (Cacciatore et al., 2019).

1.1.5 Sex, gender, and the sexually dimorphic body

Male and female lines of development differ particularly in reproductive anatomy and functioning as well as secondary sex characteristics, as discussed earlier. Thus, the body can be regarded as dimorphic. However, according to most recent research, after accounting for size differences, the human brain seems to showcase rather small differences between sexes (Eliot et al., 2021). Thus, the brain can be understood as a monomorphic organ.

Gender, a social construct, refers to the psychological and social, experienced, and performed aspects of maleness and femaleness, to displaying the characteristics of and conforming to role expectations that in a given culture during a certain time period are associated with males and females.

In this dissertation, the term sex is used to refer to the biological aspect of being male or female; the combination of chromosomes, prenatal hormonal functions, genital anatomy, hormonal functions in puberty and reproductive years, that for the most display uncontradicted male and female developments. Disorders of sex development resulting in atypical development of chromosomal, gonadal, or anatomical sex, are outside the scope of this dissertation.

1.2 Identity and gender identity

1.2.1 Identity

Identity refers to the unique combination of various traits, such as physical and psychological characteristics, ethnicity, and social roles, producing a sense of "self". Even though throughout life appearances, values, and social roles, for example, tend to alternate and shift, part of one's identity is considered to include a sense of continuity; the person remains the same although they evolve in various aspects of life (American Psychiatric Association, n.d.). According to Erik H. Erikson's developmental theory, identity formation is the central developmental task of adolescence (Erikson, 1964).

James Marcia developed the most significant theory on adolescent and young adult identity development to date, called ego-identity status (Marcia, 1966). Marcia suggested that individuals can be assigned to one of four identity statutes, based on the work of two dimensions – exploration and commitment. Exploration refers to the process of exploring various identity alternatives, while commitment refers to the choices (i.e., commitments) made in relation to these identity alternatives. The four identity statuses are foreclosure, identity diffusion, moratorium, and identity achievement. A foreclosed identity is one that is assumed without exploring identity alternatives. Identity diffusion refers to a state in which an individual neither explores identity alternatives nor makes commitments. Moratorium refers to a state in which active exploration of identity alternatives takes place. Identity achievement is the most stable and mature status of the four and refers to individuals who have explored various identity alternatives and eventually committed to one.

Foreclosure and identity diffusion are typical in adolescence (Ferrer-Wreder & Kroger, 2019). As per Marcia's theory, the ideal identity development during adolescence progresses from foreclosure or identity diffusion through moratorium to identity achievement. Prolonged state of identity diffusion has been associated, for example, with risky behaviour and issues in peer relations (Ferrer-Wreder & Kroger, 2019). Identity development is triggered by an identity crisis, when an individual needs to make choices regarding various aspects of life, such as education and personal values. However, even an achieved identity remains malleable and identity work can be triggered by subsequent identity crises later in life.

Since 1966, Marcia's theory has been extended or further developed by various researchers (Schwartz, 2001). One of the more cited theories on identity development was conceptualized by Luyckx et al. (2006), who suggest that rather than two, a total of four dimensions comprises exploration and commitment making. However, like Marcia, they posit that failing to progress towards identity achievement may predispose adolescents to maladjustment and give rise to psychopathology.

1.2.2 Gender identity and sexual orientation

Adelson & The American Academy of Child and Adolescent Psychiatry (AACAP) Committee on Quality Issues (CQI) (2012) define sexual orientation as "the sex of the person to whom an individual is erotically attracted. It comprises several components, including sexual fantasy, patterns of physiological arousal, sexual behavior, sexual identity, and social role." These individuals may also be called sexual minorities.

Sexual and gender (see below) minorities are often referred to with common abbreviations. For example, The Center, a community centre established in 1983 in New York, refers to

sexual and gender minorities as “LGBTQIA+” (lesbian, gay, bisexual, transgender, queer or questioning, intersex, asexual, and more) (https://gaycenter.org/about/lgbtq/).

Sexual orientation is a separate and independent entity from gender identity, and this dissertation focuses on gender minority youth.

1.2.3 Gender identity

The Standards of Care, 7th version by the World Professional Association for Transgender Health define gender identity as “a person’s intrinsic sense of being male (a boy or a man), female (a girl or a woman), or an alternative gender (e.g., boygirl, girlboy, transgender, genderqueer, eunuch)” (Coleman et al., 2012).

Most people present with so-called cisgender identity, meaning that their sex (as defined by the anatomy of their external genitalia) is aligned with their intrinsic sense of their gender, e.g., a man born with male genitalia regards himself as male.
Some people experience incongruence between their sex and said intrinsic feeling of gender. These individuals may identify with the opposite sex (e.g., female sex, identifies as a male), with something in between male and female sex, or something outside the male-female spectrum altogether. In the latter mentioned case, gender identity is considered non-binary, whereas identifying strictly with male or female gender constitutes a binary gender identity. “Transgender” is often used as an umbrella term to describe individuals whose gender identity differs from the mainstream (Collin et al., 2016), and these individuals can also be considered as gender minorities.

Not to be confused with gender identity, gender dysphoria refers to distinct and continuous distress caused by the incongruence

between experienced gender and genitalia (American Psychiatric Association, 2013). Gender expression, much like gender itself, on the other hand, refers to clothing, hairstyle, behavior, and various other characteristics that are at a certain time culturally associated with being a male or female and is also a separate entity from gender identity.

Transgender identity does not automatically incite gender dysphoria, which may include the desire to change one's physical appearance through surgery or hormone therapy. Additionally, it is not synonymous with a desire to express or live according to one's gender identity (Coleman et al., 2012; Steensma et al., 2013).

This distinction represents a major paradigm shift since research on transgender individuals began in the 19th century. Cases exhibiting what is now called gender dysphoria and atypical gender expression have been documented as early as 1886 (von Krafft-Ebbing, 2007). At the time and for many subsequent decades, being transgender was considered a mental health concern (Korpaisarn & Safer, 2019). In the following decades, as the body of research on what was then known as transsexualism began to grow, the first sex reassignment surgeries were performed and being transgender began to appear in public discussion, the concept of what is now called gender identity began to slowly emerge (Drescher, 2010).

Experiencing distress due to incongruence between bodily characteristics and experienced gender – or gender identity – slowly began to be recognized as an entity of its own, not a manifestation of psychopathology (Drescher, 2010).

As a result, in 1980, three psychiatric diagnoses were added to the third version of the Diagnostic and Statistical Manual of Mental Disorders (DSM-III) (The American Psychiatric

Association, 1980): gender identity disorder of childhood, transsexualism for adolescents and adults, and psychosexual disorder not elsewhere classified (a residual diagnosis). In the following decades as more research accumulated, alongside a gradual change in cultural attitudes to gender, the concept of transgender identity and gender dysphoria being separate entities began to solidify. In DSM-V (American Psychiatric Association, 2013) – the fourth iteration of the Diagnostic and Statistical Manual of Mental Disorders since DSM-III (see (Zucker, 2010) – gender identity disorder was replaced with gender dysphoria, emphasizing that transgender identity itself is not a sign of psychopathology. Published some years later, The Standards of Care 7th version by World Professional Association for Transgender Health notes "only some gender-nonconforming people experience gender dysphoria at some point in their lives." (Coleman et al., 2012, p. 5). However, based on currently available research, it is unknown what portion of transgender people experience gender dysphoria.

Indeed, in recent years, transgender identity has been widely discussed in traditional as well as social media (Marchiano, 2017). At the beginning of August 2022, a Google search with the keyword "transgender" yielded approximately 440 million results, while #transgender has been tagged to a 12.1 million Instagram posts. Similarly, research interest increased in the 2010s. Between 1992 and 2010, a PubMed search with the same keyword returned 533 results, whereas a little over 10,000 results were returned for the same search between 2011 and 2022.

Yet the rise of transgender identity and gender dysphoria is not limited to increased media and research coverage. Specialized gender clinics have seen an upsurge in referrals among gender dysphoric minors seeking medical interventions in Western countries (De Vries et al., 2011; Kaltiala et al., 2020; Wood et al., 2013). Among adults, and mostly in clinical samples, Arcelus et al.

(2015) reported an increased prevalence of transsexualism over the last 50 years in their meta-analysis of prevalence studies of transsexualism (the ICD-10 equivalent of transsexualism of previous iterations of the DSM, see earlier). These findings, however, are not applicable to general population. Additionally, given that only some transgender individuals experience gender dysphoria and only some of the time, the prevalence of transgender identity among adolescents and adults cannot be determined from these findings.

Some estimates of the prevalence of transgender identity have been presented, however. Among adults, Meerwijk & Sevelius (2017) estimate that approximately 0.39% of US adults identify as transgender and they additionally note a substantial annual increase in the number of transgender adults in the US. Their estimate is based on national probability samples. Among adolescents, Herman et al. (2017) estimated that 0.7% of 13–17-year-olds in the US identify as transgender, based on national state-administered surveys from 2014 to 2015. In some recent studies among high school students, self-reported prevalence of transgender identity is significantly higher, even up to 4% (Becker et al., 2017; Kaltiala-Heino & Lindberg, 2019; Zucker, 2017).

However, there is currently no consensus whether transgender identity and gender dysphoria are actually more prevalent, or if the increased prevalence witnessed in surveys and referrals to gender identity clinics stems from A more inclusive and accepting culture and more widely available treatment options for gender dysphoric individuals, i.e., are more transgender individuals (with or without gender dysphoria) simply “coming out”?

1.2.4 Development of Gender Identity

Gender identity typically develops accordantly with sex. Hence, it is not possible to evaluate exactly which factors contribute to the development of cisgender identity and to what extent. However, like other aspects of identity, gender identity evolves and consolidates through stages of exploration and consolidation (Bhattacharya et al., 2020; Schimmel-Bristow et al., 2018).

Transgender identity, on the other hand, offers the researcher the opportunity to examine the possible existence of factors that contribute towards the development of transgender identity. However, research has mainly focused on gender dysphoric individuals and, more importantly, has not been able to provide conclusive evidence as to how and why transgender identity comes into being (Korpaisarn & Safer, 2019; Steensma et al., 2013). It is likely a complex combination of biological, psychosocial, and environmental factors.

It is noteworthy that only about 15% of gender dysphoric children continue to experience gender dysphoria in adolescence or adulthood (Steensma et al., 2011). Steensma et al. (2011) suggest that between the ages 10 and 13 (i.e., before puberty or in the early phases of puberty), three factors seem to increase or decrease gender dysphoria in individuals with a history of childhood gender dysphoria: physical maturation brought on by puberty, being more explicitly treated according to one's sex and the discovery of sexuality. These factors likely expose developing adolescents to explore their gender identity in more detail, leading to consolidation of a gender identity aligned with their sex, or more rarely, acceleration of gender dysphoria.

One could hypothesize these factors constitute an identity crisis that acts as a catalyst for identity development, or in this instance, gender identity.

1.3 Gender Minority Stress and Resilience Measure

Meyer (1995, 2003) describes in the so-called Minority Stress Model how certain stress factors experienced particularly by lesbian, gay and bisexual (LGB) people affect the mental well-being of this population. In the Minority Stress Model, stressors particularly relevant for minorities are separated into two distinct groups – external and internal. External stressors are related to how others treat LGB people, and they may manifest, for example, as violence or rejection, which, importantly, are related to one's sexual minority identity. Internal stressors describe how past experiences can lead to fear of future events or even negative beliefs about one's identity. Meyer also describes minority specific resilience promoting factors, such as support from other members of the LGB community.

In the 21st century, as transgender identity has become more visible in research as well as in traditional and social media, disparities in health and well-being between transgender and cisgender populations have been uncovered. Including mostly adults and utilizing convenience samples, studies found that transgender individuals report alarmingly high rates of physical and sexual violence (Clements-Nolle et al., 2006; Kenagy & Bostwick, 2005; Lombardi & Malouf, 2001; Xavier et al., 2005), substance abuse (Xavier et al., 2005) and suicidal ideation (Clements-Nolle et al., 2006) for example.

Simultaneously, research findings began to document how various adverse events and negative health outcomes experienced by transgender people might relate to the transgender identity itself. For example, transgender people report having been denied a job or having been fired due to their transgender identity (Bradford et al., 2013). Another study found

that transgender individuals who had experienced harassment due to their gender identity were four times as likely to have attempted suicide in comparison to those who had not experienced such treatment (Goldblum et al., 2012).

Thus, it seems appropriate that Hendricks & Testa (2012) conceptualized an adaptation of Meyer's minority stress model for transgender people called the gender minority stress and resilience (GMSR) measure.

While both LGB and transgender populations likely experience similar stress factors, some differences have been suggested. Both populations have reported experiencing violence and discrimination due to their identity, but transgender people may experience additional forms of discrimination, for example, by not being able to access medical care or by being unable to access safe restrooms in public places (Grant et al., 2010; Scheim et al., 2014). Another unique stressor experienced by transgender people is called non-affirmation. Transgender people may choose to use pronouns, or a name not culturally associated with their appearance (e.g., a person with male sex presenting with female gender identity but the gender expression of a typical male may choose to be referred to by feminine pronouns), and when this is not respected (either deliberately or accidentally) by others, non-affirmation occurs. In a later study, chosen name use was linked to positive mental health outcomes among transgender youth (Russell et al., 2018).

Transgender people likely experience similar internal stress as LGB people in the form of fear of future events based on past negative experiences, and internalized negative beliefs about one's identity (internalized transphobia). Concealment of one's identity likely affects both populations. However, among transgender people, gender identity may additionally be conveyed through gender expression. As a result, identity

concealment may manifest as identity non-disclosure as well as inhibition of gender expression.

As to resilience factors, Meyer suggests that certain factors, namely support from one's community and identity pride, can act as buffers against stressors. Hendricks & Testa (2012) posit that similar resilience promoting factors exist for transgender people, and some findings support this notion (Schimmel-Bristow et al., 2018; Taube & Mussap, 2022; Testa et al., 2014).

However, coming out and the associated community connectedness and identity pride also offer adolescents access to new peer networks in which their identity is celebrated (Marchiano, 2017; Shrier, 2020). Hence the association between coming out and reduced distress seems to be strongest among those transgender adolescents who have the strongest connections to their community (Wall et al., 2022). In sexual minority populations, such has been associated with quicker progression through "coming-out milestones" (Moskowitz et al., 2022).

1.4 Mental Health in Adolescence

1.4.1 Internalizing symptoms and disorders

Internalizing disorders is a group of clinical diagnoses manifesting predominantly as depressive and somatic symptoms, as well as anxiety (American Psychiatric Association, 2013). Major depressive disorder and anxiety disorders fall into this group. The symptoms of these disorders – depression and anxiety – may be called internalizing symptoms, while they are often also referred to as emotional symptoms.

Prevalence of depression and anxiety, along with many other psychiatric disorders, increases markedly in adolescence (Paus et al., 2008; Solmi et al., 2022). Depression is additionally more common among girls than boys (Salk et al., 2017). Gender differences are likely the result of complex interactions of affective, biological and cognitive factors with one's environment (for a review, see Hyde et al., 2008). Mental health disorders first emerging in adolescence often persist or reoccur in adulthood (Fichter et al., 2009; Jones, 2013; Kim-Cohen et al., 2003). Thus, adolescence represents a critical time for current mental health as well as later life.

In recent years, survey studies with large school-based samples, featuring questions about gender identity and emotional symptoms, have been published.

Johns et al. (2019) elicited experiences of feeling sad or hopeless as a part of establishing suicide risk and found that 53.1% of transgender students reported having had such feelings in the past 12 months, significantly more than cisgender females (39.3%) or males (20.9%) in their sample. Their sample included 131,901 students from US high school grades 9 through 12 (ages of participants were not provided, high school students attending those grades are generally from 14 to 18 years old). In a study by Lowry et al. (2018), students who participated in the study were graded on a gender nonconformity scale based on their reported sex and gender expression. They found that higher self-reported gender nonconformity was associated with feeling sad or hopeless. In this study, study respondents numbered 6,082 and were also from US high school grades 9 through 12. In another study, 57.9% of transgender students reported emotional distress (elicited as depression and anhedonia using the Patient Health Questionnaire-2) in comparison to a 21.3% report rate among cisgender students (Eisenberg et al., 2017). In this US

based study, the sample included a total of 81,885 students from the 9th and 11th grades.

In studies with clinical and convenience samples, a similar pattern has emerged (Connolly et al., 2016), although the focus of the present study is on adolescents in general population as clinical and convenience samples render results unapplicable to general population.

Thus, it seems that transgender adolescents report depressive symptoms significantly more often than do their cisgender peers. For comparison, in a large cross-sectional study in the US, 9.18% of girls and 8.39% of boys reported depressive symptoms (Keyes et al. 2019). In a cross-sectional study in Germany, 8.2% of adolescents in general population reported depressive symptoms (Wartberg et al., 2018).

Unfortunately, as far as the author knows, none of the large studies with unselected adolescent samples have elicited anxiety symptoms (e.g., Eisenberg et al., 2019; Taliaferro et al., 2019; Toomey et al., 2018). However, some examples have been reported in selected samples. In US, in a small community-based sample of transgender adolescents, 48% of parents reported that their child had been diagnosed with an anxiety disorder (Katz-Wise et al., 2018). In another US study, 67.9% of adolescents referred to a gender clinic had a prior anxiety disorder diagnosis, while 24.5% reported current anxiety symptoms (Van Donge et al., 2019). Although comparisons of clinical samples to unselected samples are not ideal, approximately 32% of US adolescents in general population are estimated to suffer from anxiety disorders (Kessler et al., 2012; Merikangas et al., 2010), a stark contrast to what has been documented in the studies mentioned above.

In conclusion, emotional symptoms and disorders increase in adolescence, and often persist into adulthood. Transgender

adolescents seem to present with excessive depressive symptoms in comparison to their mainstream peers in selected and unselected samples, whereas less is known about anxiety. Thus, it is important to control for confounding by emotional symptoms and disorders when studying associations between various psychosocial risk factors and transgender identity.

1.4.2 Externalizing symptoms and disorders

Externalizing disorders are a group of disorders in which problems in the control of emotions and/or behaviour are present, resulting in actions that violate others or bring harm to the self, or both. These actions, externalizing symptoms, include stealing, aggression, bullying, destruction of property and substance use (American Psychiatric Association, 2013). Like internalizing disorders, externalizing disorders become increasingly common during adolescence (Paus et al., 2008; Solmi et al., 2022). Externalizing disorders specific to children and adolescents include attention-deficit hyperactivity disorder, oppositional defiant disorder and conduct disorder (Samek & Hicks, 2014). Of these, particularly conduct disorder has been associated with substance use and substance use disorders (Rodgers et al., 2015), and substance use disorders can also *per se* be conceptualized as externalizing disorders (Krueger et al., 2005).

In spite of some examples in the literature, relatively little is known about externalizing disorders and symptoms among transgender adolescents (Kaltiala-Heino et al., 2018).

In a large student sample in the US, transgender adolescents engaged in substance use over two- to fourfold more commonly than their cisgender peers (Day et al., 2017). In another student sample, transgender adolescents were more likely to engage in

problem gambling than their cisgender peers (Rider et al., 2019). In a primary care sample, transgender adolescents presented with externalizing disorders such as ADHD and conduct disorders more commonly than their controls (Becerra-Culqui et al., 2018).

1.4.3 Suicidality

Suicidality or suicidal ideation and behaviour can refer to 1) suicide, a fatal act with intent to die, 2) suicide attempt, non-lethal act with intent to die or 3) suicidal ideation, which can further be separated into so-called passive suicidal ideation, i.e., thoughts related to the desire to be dead or active suicidal ideation, i.e., thoughts about committing suicide.

In contrast to suicidal ideation and behaviour, non-suicidal self-injury is behaviour characterized by deliberate self-harm without the intent or will to die and is relatively common (Halicka & Kiejna, 2018). Although classified as suicidal ideation and behaviour, passive suicide ideation is relatively common among young people (Reinherz et al., 1995).

It has been estimated that approximately one million people commit suicide each year (World Health Organization, 2012) while a further 25 million attempt suicide (Crosby et al., 2011) and 140 million engage in some form of suicidal ideation (Borges et al., 2008) annually. Suicidality is of special concern for adolescents; suicide is, for example, the second most common cause of death among 10–19 year-old adolescents in the US (Ruch et al., 2019).

In Finland, suicide was the most common cause of death among adolescents aged 15 to 19 years old in the period of 2016-2020, during which time 151 adolescents took their own life. However,

in Finland, suicide rates have seen a decline since the 1990's (Pajunen, 2022).

Suicide-related outcomes have been the focus of a myriad of studies, and many risk factors and correlates of suicidality have been discovered in the past several decades of research. For example, mental health issues such as depression, and social issues such as problems in peer relations, have been associated with suicidality among general population (Franklin et al., 2017).

Some studies with adult transgender samples link victimization (physical violence, such as attacks) with increased suicidality (Barboza et al., 2016; Rood et al., 2015).

As research on transgender youth proliferated studies with mostly clinical samples shed light on yet another health disparity between transgender and cisgender adolescents; suicidal ideation and behaviour seem to be far more common among transgender than among cisgender youth (Connolly et al., 2016). Although limited data is available on deaths by suicide, mortality rates seem to be higher among those transgender adolescents attending a gender clinic than among their peers in general population (Biggs, 2022). However, as the author noted, this mortality rate is "orders of magnitude smaller" than suicide attempts reported by transgender adolescents in survey studies. Additionally, clinical or convenience samples limit the ability to apply the findings to general population.

As cross-sectional studies with population-based samples began to emerge, mostly in the US, similar findings were made. Findings indicate that, for example, suicide risk (Johns et al., 2019), suicidal ideation during the past twelve months (Perez-Brumer et al., 2017) or ever (Eisenberg et al., 2017) as well as lifetime suicide attempts (Eisenberg et al., 2017; Toomey et al., 2018) are more likely among transgender than among cisgender adolescents.

As an example of the disparities, Perez-Brumer et al. (2017) reported that approximately 34% of the transgender adolescents in their sample reported suicidal ideation during the past 12 months (vs. approximately 19% reported by cisgender students). In the study by Toomey et al. (2018) approximately 28–51% of transgender adolescents reported having attempted suicide (vs. 10-18% for cisgender males and females).

As issues in peer relations, such as victimization, are considered a correlate of suicidality among the general public (Turner et al., 2012), and additionally specifically named in the gender minority stress and resilience measure (Hendricks & Testa, 2012), studies should account for such factors when studying the associations between transgender identity and suicidality. However, that is in most studies not the case.

In school-based samples, only one study (Perez-Brumer et al., 2017) accounted for victimization (physical and verbal bullying, acts of aggression perpetrated out through destruction or theft of property). They found the association between transgender identity and suicidal ideation attenuated (but remained still statistically significant) after accounting for depressive symptoms and victimization. Some studies with convenience samples have reported similar findings. Testa et al. (2017) found the GMSR factors, including victimization, partially explained variance in suicidal ideation in their selected sample of transgender and gender nonconforming adults. In a selected sample of adolescents and young adults, Kuper et al. (2018) found that gender-related victimization was associated with suicidal behaviour measured as suicide attempts, suicidal ideation and positive suicide risk screen.

However, as the authors of the aforementioned studies noted, gender minority stress and resilience factors explained variance

in suicidality only partially. For example, Perez-Brumer et al. (2017) noted that depression and school-based victimization explained approximately 14–17% of the association between suicidal ideation and gender identity. Testa et al. (2017) noted that GMSR factors explained 20% of the variance in levels of suicidal ideation.

These results reflect those of Franklin et al. (2017), in whose meta-analysis it was found that demographic, interpersonal and mental health risk factors each only partially explain variance in suicidality among cisgender adolescents in general population.

1.4.4 Bullying and peer relations

Bullying is defined as deliberate aggressive behaviour that is repeated over time and includes a power imbalance between the bully or bullies and the victim (Olweus D, 1993). Bullying can take various forms such as physical, verbal, or psychological harm (Olweus, 2013).

Involvement in bullying either as a bully, victim or both is relatively common among adolescents (Knaappila et al., 2018) and has documented deleterious effects on various aspects of health and life as it inhibits a critical component of adolescent development, namely the formation of peer relations (Laursen & Hartl, 2013). Thus, involvement in bullying is seen as a risk factor for mental disorders (Wolke & Lereya, 2015), but, for example, WHO even classifies it in (mental) health outcomes in their Health Promoting Schools framework (Langford et al., 2015). For example, both being subjected to bullying and perpetrating bullying have been associated with emotional problems, such as depression and suicidality (Heikkilä et al., 2013; Kaltiala-Heino & Fröjd, 2011; Kurki-Kangas et al., 2019). The victims are also more likely to play truant from school and perform worse academically

(Wormington et al., 2016). Perpetration of bullying is further associated with antisocial behaviour, such as substance abuse and delinquency (Liang et al., 2007).

Being bullied and bullying others also correlate, (Kaltiala-Heino & Fröjd, 2011; Mark et al., 2019), and bully-victims (i.e., those involved both as bullies and as victims) seem to experience the most deleterious effects on health among those involved in bullying (Forero et al., 1999; Kennedy, 2021; Sourander et al., 2007).

In adolescence, bullying is often of a sexual nature, and, for example, manifests as negative remarks about homosexuality and gender-nonconforming gender expression (Ashbaugh & Cornell, 2008; Toomey et al., 2012). This could relate to heterosexism, or the subconscious tendency to maintain traditional male and female roles in society (Chesir-Teran, 2003; Toomey et al., 2012), a widespread phenomenon (Dunn & Szymanski, 2018). Additionally, bullying is often directed at individuals perceived to be different in general (Jones et al., 2018; Price-Feeney et al., 2018).

Earlier research indicates that sexual minority youth are bullied 1.5–2 times more commonly than their heterosexual peers (Abreu & Kenny, 2018; McKay et al., 2019). In some studies, sexual minority youth have been found to participate in bullying as bullies (Berlan et al., 2010, selected sample; Eisenberg et al., 2015, general population sample). This is contrary to the assumption of discrimination against sexual minority youth. It has, however, been suggested that bullying perpetration among sexual minority youth could be a coping mechanism, a way of venting anger or frustration stemming from being victimized or witnessing victimization of other members of the sexual minority community (Eisenberg et al., 2016).

As transgender adolescents may present with gender expression deviating from what is culturally associated with their sex, one could assume that they become "easy" targets for bullies, much like those who present with non-heterosexual identity. On the other hand, fear of bullying or experiences of being bullied could lead to concealment of one's gender identity, either by altering gender expression or by identity non-disclosure. According to GMSR theory, such events likely have a negative impact on the mental health of transgender adolescents.

Thus, similarly to sexual minority youth, large school samples indicate that transgender youth report being subjected to bullying more commonly than their cisgender peers (Bishop et al., 2020; Day et al., 2018; Eisenberg et al., 2019; Johns et al., 2019). Study findings also indicate that transgender youth more commonly experience bullying related to their gender or sexual orientation (Day et al., 2018). In some studies, in which gender identity was not specifically elicited, but rather how gender conforming study participants felt themselves (e.g., masculine female, or feminine male), bullying has been associated with greater gender nonconformity among adolescents (Lowry et al., 2018; van Beusekom et al., 2020). Similar findings have been reported among transgender adolescents (Gower et al., 2018; Witcomb et al., 2019). In one study, sexual and gender minority youth experienced similar rates of bullying, while those individuals with an intersecting identity of sexual and gender minority reported highest rates of bullying victimization (Eisenberg et al., 2019).

As far as the author knows, bullying perpetration among transgender adolescents has not previously been studied. However, in one study (Dank et al., 2014), transgender adolescents reported some of the highest rates of perpetration of sexual harassment among a study population of unselected

high school students in the US. However, no explanation for this observation was suggested.
Difficulties in peer relations can manifest in various ways, and even though such difficulties may not constitute what is considered bullying, they seem to have a deleterious effect on well-being among gender minority youth.

As summarized by Tankersley et al. (2021) in their review article entitled “Risk and Resilience Factors for Mental Health among Transgender and Gender Nonconforming (TGNC) Youth: A Systematic Review”, poor peer relations were the most documented correlate of negative mental health variables. Of note, however, the samples were clinical and only two of the five studies included in the review had an adolescent sample (Levitan et al., 2019; Röder et al., 2018).

In these two studies, poor peer relations were assessed with items from the Youth Self Report Scale: “I don’t get along with other kids”; I get teased a lot”; “I am not liked by other kids”. Thus, peer relations variables (see below) were included in the present study.

In conclusion, transgender adolescents seem to be subjected to bullying type of behaviour more often than their cisgender peers. However, none of the population-based studies mentioned accounted for the major covariates of being subjected to bullying, such as depression, substance abuse and participating in bullying as a perpetrator. Thus, it remains unclear to what extent transgender identity is related to subjection to bullying and to what extent such an association is better explained by confounding by known correlates of subjection to bullying and transgender identification.

1.4.5 Sexuality

The WHO defines sexuality as "…a central aspect of being human throughout life [that] encompasses sex, gender identities and roles, sexual orientation, eroticism, pleasure, intimacy and reproduction. Sexuality is experienced and expressed in thoughts, fantasies, desires, beliefs, attitudes, values, behaviours, practices, roles and relationships…" (World Health Organization, n.d.). Sexual health is defined as a "state of physical, emotional, mental and social well-being in relation to sexuality; it is not merely the absence of disease, dysfunction or infirmity… " (World Health Organization, n.d.). As broadly defined as these terms are, sexuality and sexual health pervade many aspects of life, including mental health.

It is plausible to think that various factors could disturb the sexual development of transgender adolescents. Even though not all transgender identifying adolescents suffer from gender dysphoria, some evidently do (Wood et al., 2013). Among those individuals, the physical changes triggered by puberty may lead to concerns over body image, or even aversion to genitals (De Vries et al., 2014; Dehaan et al., 2013; Doorduin & van Berlo, 2014). Many transgender adolescents present with mental health problems, both in clinical and convenience samples (Connolly et al., 2016; Holt et al., 2016; Olson et al., 2015) as well as unselected (Johns et al., 2019; Perez-Brumer et al., 2017; Toomey et al., 2018) samples, which may negatively affect self-esteem and subject the adolescents to social isolation. Additionally, transgender adolescents may have fewer opportunities to find suitable partners because of belonging to a minority group (Korchmaros et al., 2015). Such factors could reduce the desire (or ability) to engage in romantic and erotic encounters, which are considered a part of normative sexual development. On the other hand, psychopathology during adolescence is related to early and risk-taking sexual behaviour (Kaltiala-Heino et al., 2015;

Savioja et al., 2017). Such behaviours could result from comfort-seeking patterns or the inability to protect oneself against inappropriate encounters (Savioja et al., 2015). As psychopathology among transgender adolescents is relatively common, it is plausible to assume that transgender adolescents are at risk of becoming involved in sexual behaviour that is inappropriate for their developmental phase.

Little is actually known, however, about the sexuality of transgender adolescents, and the few research papers available report mixed results. In one study, LGBTQ (lesbian, gay, bisexual, transgender, queer or questioning) youth as a whole had more sexual experiences than their heterosexual cisgender peers (Korchmaros et al., 2015). However, this particular study did not differentiate between gender identity or sexual orientation subgroups. Studies with clinical samples in Finland and in the Netherlands report that gender dysphoric adolescents had fewer sexual experiences than their peers in general population (Bungener et al., 2017; Kaltiala-Heino et al., 2019b). However, a Canadian study based on an activist sample found no such difference (Veale et al., 2016).

Besides possible differences in the sheer numbers of sexual experiences between transgender and cisgender adolescents, the nature of sexual experiences may also differ. For example, in one study, 50% of transgender adolescents reported engaging in sexual activities without involving their genitalia (Cerwenka et al., 2014). Depending through which lens the matter is viewed, this could be seen as being able to engage in sexual encounters despite a possible aversion towards genitals or as handicapped sexuality.

Transgender adolescents additionally seem to experience negative sexual experiences such as sexual harassment and dating violence more commonly than their age peers in general

population (Dank et al., 2014; Kaltiala & Ellonen, 2022; Mitchell et al., 2014). Such differences could arise from heterosexism, or the subconscious cultural tendency to maintain traditional gender roles and safeguard heterosexuality as the superior sexual orientation (Chesir-Teran, 2003; Pina et al., 2009; Street et al., 2007). Interestingly, sexual and gender minority adolescents may also perpetrate sexual harassment more often than their heterosexual cisgender peers (Dank et al., 2014). However, much like bullying perpetration among transgender adolescents, this subject has not been the focus of virtually any studies.

1.5 Summary of the literature

Referrals of adolescents with characteristics of gender dysphoria to specialized gender clinics have experienced an upsurge in Western countries. Simultaneously, prevalence of transgender identity may be on the rise in general population. However, it is unknown whether these phenomena are related to the wide portrayal of transgender identity in public, an increase in social acceptance towards gender minorities (thus making it easier to "come out") or whether the incidence of transgender identity is indeed on the rise.

Adolescence is challenging phase of life from a developmental standpoint, during which many mental health disorders manifest and often persist into adulthood. One of the core developmental tasks of adolescence is the formation of identity, which includes gender identity. Simultaneously peer relations assume a significant role in the adolescent's life, steering the easily excitable adolescent brain into social interactions. It is unknown how transgender identity affects this progression from childhood to young adulthood.

Transgender identity, much like sexual minority identity, seems to be associated with adversities in many aspects of life and well-being, including emotional problems such as depression and suicidality as well as difficulties in peer relations. Attempts have been made to explain the underlying reasons for these adversities in the gender minority stress and resilience (GMSR) measure, which also describes how positive intrinsic and environmental factors may improve well-being among transgender individuals.

Based on unselected samples, transgender adolescents seem to present with a marked increase in suicidal ideation and behaviour in comparison to their cisgender peers. However, as many studies associate transgender identity with depression and victimization – risk factors for suicidality – confounding by these should be taken into account when studying associations between transgender identity and suicidality. In most cases, however, such is not the case. Thus, it remains unclear to what extent transgender identity is in itself related to suicidality. Suicidality is a major health concern among adolescents. Thus, it is important to know to what extent suicidality among transgender adolescents is attributable to peer relations.

Similarly, issues in peer relations have been the focus of many studies, and studies with large, unselected samples are available. In comparison to their cisgender peers, transgender adolescents report subjection to bullying and victimization much more often. Bullying is often directed towards those who are perceived as different, which could explain these disparities. Another theory is related to heteronormativity, a widespread phenomenon related to the subconscious tendency to maintain traditional male and female roles in society. However, there are some limitations in the currently available literature. Virtually nothing is known about bullying perpetration among transgender adolescents, a behaviour associated with subjection to bullying. Involvement in

bullying is additionally associated with internalizing as well as externalizing problems, of which the former is widely associated with transgender identity while there is limited evidence available regarding the latter. Thus, when studying associations between transgender identity and involvement in bullying – either as a victim or as a bully – mental health factors as well as participating in bullying in the other role should be accounted for.

Sexuality pervades the very core of the being human, thus normative sexual development during adolescent years represents the natural progression towards adulthood. During adolescence, a complicated cascade triggers puberty, the culmination of which is reaching reproductive maturity. Simultaneously, the hallmarks of adult sexuality emerge. Progression of sexual encounters from mixed-group socializing to hand holding, kissing and petting and eventually to intercourse is considered normative from the standpoint of sexual development. On the other hand, early and risk-taking sexual behaviour has been associated with negative mental health outcomes, possibly because the easily excitable adolescent brain still lacks the tools necessary to deal with the emotional burden imposed by adult-like sexual encounters. It has also been suggested that early and risky sexual behaviour could represent comfort seeking patterns related to the insecurities of the adolescents themselves. However, little is known about the sexuality of transgender adolescents. The few studies with clinical and activist samples have yielded mixed results as to whether transgender adolescents present with normative sexual development, indicated by the accumulation of sexual experiences. Subjection to negative sexual experiences, such as dating violence and sexual harassment, also seems to be more common among transgender adolescents and one study reported that in their sample transgender adolescents were the most likely to perpetrate sexual harassment (Dank et al., 2014). Give the

scarcity of the research, the root cause of these findings remain unclear.

2 Aims of the study

This study aims to answer the following questions:

1. Is transgender identity associated with severe suicidal ideation among Finnish adolescents? (Study I)
2. Is transgender identity associated with bullying involvement among Finnish adolescents? (Study II)
3. Do transgender and cisgender youth differ regarding normative and negative sexual experiences among Finnish adolescents? (Study III)

3 Method

3.1 Data and participants

3.1.1 The School Health Promotion Study (II)

Two data sets are used in this study. The first data set comprises data from the School Health Promotion Study (SHPS) of the National Institute for Health and Welfare, which is a school-based cross-sectional anonymous survey designed to examine the health, health behaviours and school experiences of adolescents. The survey is conducted among 8th and 9th graders of mandatory comprehensive school and second-year students in the upper secondary education that follows. Upper secondary education refers to high school and vocational school. The survey questionnaire is sent to every municipality in Finland. The municipalities decide if the schools in their area will participate in the survey and most schools do participate. The survey is implemented primarily for health policy and administrative purposes, and the data are available on request for purposes of scientific research. The main aim of the survey is to produce national adolescent health indicators that municipalities can utilize in planning services and that can be used at national level to assess the effectiveness of health policies. The authors obtained permission to use the data for scientific research but were not responsible for its collection. The School Health Promotion Study received ethical approval from Tampere University Hospital ethics committee and the ethics committee of the National Health Institute (decisions 98 944 and

THL/1704/6.02.01/2016). The survey has been conducted biennially since 1996.

This study uses data from 2017. In 2017, survey participants numbered 139,829 in total (Halme et al. 2018). Of these, 52.7% were in comprehensive school ("comprehensive education sample"), 25.0% in upper secondary school and 23.3% in vocational school ("upper secondary education sample"). Of the 139,829 study participants, 48.9% reported that they were male and 50.4% that they were female (as indicated in identity documents). Of all respondents, 0.7% (n= 957) did not report their sex, and these were excluded from further analyses. The mean age (SD) of respondents in the comprehensive education sample was 14.83 (0.82) years, 16.84 (0.83) in the upper secondary school sample and 17.29 (2.43) in the vocational school sample. Of the study participants, 3.5% (n = 4,940) reported they were 21 years old or older and were likewise excluded from further analyses. For final sample size, see "Implausible, likely facetious responding".

3.1.2 The Adolescent Mental Health Cohort and Replication Study (I, III)

The second data set comes from the Adolescent Mental Health Cohort and Replication (AMHCR) study (Fröjd et al., 2006; Kaltiala-Heino et al., 2014). The AMHCR study is a mental health survey among students in their ninth year of comprehensive school, designed to produce epidemiological data on adolescent mental health. The person-identifiable survey was conducted in the academic years 2002–03, 2012–13 and 2018–19 in the city of Tampere, Finland. The present study is based on the cross-sectional survey of 2018–19. During that time, 17 of the 19 schools run by the city of Tampere agreed to participate. The two

missing schools could not participate due to logistical reasons. The study was duly approved by the ethics committee of Tampere University Hospital (R15009) and was given administrative permission by the appropriate authorities of the City of Tampere.

In 2018–19, a total of 1,425 adolescents logged in to the survey (Knaappila et al. 2021). Of these, 2.7% (n = 39) declined to respond, leaving 1,386 respondents AS the final sample. Of these, 48.8% reported they were female and 51.2% reported they were male (as indicated in identity documents). The mean (SD) age of the participants was 15.59 (9.41) years.

3.2 Measures

3.2.1 Sex and gender identity (I, II, III)

To mitigate the risk of study respondents confusing whether sex (as indicated in identity documents) or gender identity was being elicited, the recommended "two-step" method was used (Eisenberg et al., 2017; Reisner et al., 2014). In both the SHPS and the AMHCR studies, sex and gender identity were elicited with two separate questions located apart from each other in the survey forms. At the beginning of the survey the respondents reported their sex as stated in their identity documents, with response alternatives "boy" and "girl". In the AMHCR it was explicitly mentioned that this question referred to sex as stated in official identity documents, in the SHPS this was implicit. However, as under the law juridical sex change is not available for minors under age 18 in Finland, and practically every official form in Finland begins by eliciting sex, we feel that applicants understood that this question referred to respondents' biological and juridical sex. According to reported sex, the respondents are referred to here as boys and girls, or as males and females.

Later, in the section of the survey addressing health, respondents were asked about their perceived gender as follows: "Do you perceive yourself to be…", with response options "a boy/a girl/both/none/my perception varies". According to sex and perceived gender, the respondents were categorized to one of three gender identities: cisgender identity (reported male sex and perceives himself as a boy; or female sex and perceives herself as a girl), opposite sex identification (male sex, perceives themselves to be a girl; or female sex, perceives themselves to be a boy), and other/non-binary gender identity (independent of sex: perceives themselves to be both a boy and a girl, perceives themselves to be neither a boy nor a girl, variable).

Of the 1,386 respondents of the AMHCR study, 14 had not reported their perceived gender, thus gender identity remained unknown. Of the rest, 96.9% (n = 1,329) reported cisgender identity, 0.2% (n = 3) opposite sex identification, and 2.9% (n = 40) other/non-binary gender identity. In the analyses, cisgender and transgender (= opposite sex identification or other/non-binary gender identity) identity were compared.

In the SHPS study, gender identity subgroups could be compared due to larger sample size. In the comprehensive education sample of the SHPS study, 95.7% (n = 66,687) reported cisgender identity, 0.7% (n = 504) reported opposite sex identification while 3.6% (n = 2,483) reported non-binary identity. In the upper secondary education sample, 96.5% (n = 57,540) reported cisgender identity, 0.5% (n = 313) reported opposite sex identification and 3.0% (n = 1,792) reported non-binary identity.

3.2.2 Suicidal ideation (I)

Suicidal ideation was elicited by a question on a depression scale (see below): “Do you have thoughts of harming yourself?”, with response options “I don’t have any thoughts of harming myself/I feel I would be better off dead/I have definite plans about committing suicide/I would kill myself if I had the chance”. Respondents were classified to have severe suicidal ideation if they chose either of the last two options. The first two options indicate no or passive suicidal ideation, which has been reported to be relatively common among young people (Reinherz et al. 1995) and these were thus not coded as suicidal ideation.

3.2.3 Bullying involvement (II)

Bullying others or being a victim of bullying was elicited using two questions derived from a World Health Organization study on youth health (King et al., 1996). The questions are based on Olweus' definition of bullying (Olweus D, 1993) that have been widely accepted as a basis for bullying research. Bullying was first defined as follows: "We say a student is being bullied when another student (or group of students), say or do nasty things to him or her. It is also bullying when a student is being teased repeatedly in a way she or he does not like. But it is not bullying when two students of about the same strength quarrel or fight." Respondents were then asked how frequently they had been bullied during the ongoing school term, and how frequently they had bullied others; many times a week, about once a week, less frequently, and not at all. In the analyses, responses to these questions were dichotomized to about once a week or many times a week (= frequently) vs. less frequently or not at all.

3.2.4 Normative sexual experiences, sexual harassment and dating violence (III)

Experiences of steady relationships were elicited by asking "Are you in a steady relationship?" Response alternatives were "yes/not now but I have been earlier/I have not been in a steady relationship". In the analyses, going steady was dichotomized to ever vs. never. The progression of consensual sexual experiences from lighter (e.g., holding hands) to more intimate was measured by asking if the respondent had experienced (1) kissing on the mouth (yes/no), (2) light petting (fondling on top of clothes, (yes/no)), (3) heavy petting (fondling under clothes or naked, (yes/no)) and (4) sexual intercourse (yes/no (Kaltiala-Heino et al., 2003). All these experiences are normative, i.e., most adolescents

gain these experiences and they are largely considered a part of ordinary development (Cacciatore et al., 2019; Dalenberg et al., 2018). So as not put too much emphasis on the concept of sexual intercourse i.e., penetration, heavy petting and sexual intercourse were studied both separately and in combination (for example, in girl-girl relationships penetration may not occur).

To elicit experiences of sexual harassment, the adolescents were asked if they had ever experienced any of the following: (1) Disturbing sexual propositions or harassment by telephone or through the Internet; (2) Sexually insulting name-calling such as poof or whore; (3) Being touched in intimate body parts against one's will; (4) Being pressured or coerced into sex; (5) Being offered money, goods or drugs/alcohol in payment for sex. The response alternatives to all five questions were yes/no. For the purposes of the present study, the items were classified according to Fitzgerald et al. (1995) as gender harassment (sexual name-calling), unwelcome sexual attention (disturbing propositions and/or harassment or unwelcome touching) and sexual coercion (pressured/coerced into sex and/or being offered money for sex).

Both subjection to and perpetration of dating violence were elicited. The respondents were asked "Have you ever been subjected to violent behaviour (such as hitting, punching, hair-pulling or similar) by a date or steady partner?" and "Have you ever acted violently (for example by hitting, punching, hairpulling or similar) towards a date or a steady partner?", both with response alternatives "yes" and "no".

3.2.5 Internalizing symptoms (I, II, III)

In the SHPS (Study II), internalizing symptoms elicited were depression and generalized anxiety. Depression was measured with two screening questions: "During the past month, have you often been bothered by feeling down, depressed, or hopeless?" (yes/no) and "During the past month, have you often been bothered by little interest or pleasure in doing things?" (yes/no). Answering "yes" scored 1 point whereas answering "no" scored 0 points. These two questions have shown good psychometric properties in detecting depression in adolescents (Richardson et al., 2010). In the analyses, a sum score (0–2) of these items was used as continuous variable. Generalized anxiety symptoms were elicited by the GAD-7, a self-report questionnaire designed to identify probable cases of generalized anxiety disorder and to assess symptom severity. The GAD-7 items describe the most prominent diagnostic features of the DSM IV generalized anxiety disorder. The GAD-7 elicits how often, during the last two weeks, the respondent has been bothered by each of the seven core symptoms of generalized anxiety disorder. Response options are "not at all," "for several days," "for more than half the days," and "nearly every day," scored, respectively as 1, 2, 3, and 4. The GAD-7 has been shown to be a reliable and valid measure for detecting generalized anxiety disorder in primary care and general population (Tiirikainen et al., 2019). In the analyses the sum score (0–28) of these seven items was used as continuous variable.

In the AMCHR study (Studies I, III), depression was the sole internalizing symptom dimension elicited. Depression was measured using a modified 13-item version of the Beck Depression Inventory (Beck et al., 1974; Beck & Beck, 1972), which has been validated in Finnish (R-BDI) (Raitasalo, 2007). The Beck Depression Inventory has been shown to be a valid measure for detecting depression among adolescents (Bennett et al., 1997). The R-BDI has good psychometric properties in Finnish

adolescent population (Kaltiala-Heino et al., 1999). Each of the 13 questions had five response options and each one scored 0–3 points. The question regarding suicidal ideation was excluded, and a sum score (0–36) of the remaining 12 questions was used in the analyses as a continuous variable.

Internalizing symptoms were controlled for because they are associated with both gender dysphoria and transgender identity (Connolly et al., 2016), with suicidality (Franklin et al., 2017), involvement in bullying (Wolke & Lereya, 2015) and sexuality (Savioja et al., 2015) in adolescence.

3.2.6 Alcohol consumption (II)

As a proxy for the externalizing symptom dimension, frequent consumption of alcohol was used. Alcohol consumption was elicited as follows: "How often do you use even small amounts of alcohol, for example half a can of beer or more?" with response options "once a week or more often/once or twice a month/about once a month/less frequently/not at all." In the analyses the responses were dichotomized to once a week or more often (= frequently) vs. all other alternatives. It is important to control for confounding by externalizing symptoms because of the known associations between externalizing symptoms and involvement in bullying (Liang et al., 2007), and their possible association to transgender identity (Becerra-Culqui et al., 2018; Rider et al., 2019).

3.2.7 Peer rejection and victimization (I)

Peer rejection and victimization have been suggested as a potential mechanism increasing suicidality among gender

minority youth (Kuper et al., 2018; Perez-Brumer et al., 2017; Testa et al., 2017).

Therefore, when studying associations between transgender identity and suicidal ideation, three variables related to peer rejection and victimization were controlled for in the analyses: being repeatedly bullied, being repeatedly excluded, and not having any close friends.

Being bullied was elicited using a question derived from a World Health Organization study on youth health (King et al., 1996). Bullying was first defined as follows: "We say a pupil is being bullied when another pupil (or a group of pupils) says or does nasty things to him or her. It is also bullying when a pupil is repeatedly teased in a way she or he does not like. But it is not bullying when two pupils of about the same strength quarrel or fight". Respondents were then asked how frequently they had been bullied during the ongoing school term. Response options were: "many times a week", "about once a week", "2–3 times a month", "less frequently" and "not at all". Similarly, respondents were asked how often others had excluded the respondent and they had had to be alone, with the same response options. In the analyses these two questions were dichotomized to being repeatedly bullied and being repeatedly excluded, defined as being bullied/excluded 2–3 times a month or more often vs. less frequently or not at all. The respondents were further asked: "Do you have a close friend with whom you can discuss confidential matters?" with response options "no, none", "yes, one", "yes, two", "yes, several". In the analyses the responses were dichotomized to none/one or more.

3.2.8 Sociodemographic factors (I, II, III)

Age was calculated from date of responding and date of birth and used as a continuous variable. Confounding by age needed to be controlled for because during adolescence, even small age differences may have an impact on all aspects of development (Dahl et al., 2018; Steinberg, 2005). Similarly, confounding by sex is important because boys and girls develop at different rates during adolescence (Fechner, 2002) and because externalizing and internalizing symptoms, behaviours and disorders are unevenly distributed by sex (Salk et al., 2017; Schulz & Muschalla, 2022).

The family socioeconomic variables used (Studies I, II) were mother's education (basic only vs. more than basic), father's education (basic only vs. more than basic) and parental unemployment (neither parent vs. one or both unemployed or laid off during the past 12 months). Socioeconomic variables were controlled for because they are associated with peer victimization (Aho et al., 2016) as well as with mental disorders (Hill, 2002; Torikka et al., 2014) and suicidality (Qin et al., 2003) and finally, risky sexual behaviour (Boislard P. & Poulin, 2011) and sexual harassment (Biswas et al., 2020; Kaltiala-Heino et al., 2016).

In Study II, further difficulties in parent-adolescent communication (never able to discuss important things with parents vs. can talk with parents at least sometimes) was further controlled for, because parental support has been shown to function as a protective factor against bullying (Biswas et al., 2020).

3.2.9 Implausible, likely facetious responding (I, II, III)

It has been demonstrated that some adolescents intentionally misrepresent themselves in survey studies. They may, for example, exaggerate their belonging to a minority group as well as exaggerate psychosocial problems, symptoms, and problem behaviours (Cornell et al., 2012; Fan et al., 2006; Robinson-Cimpian, 2014). As a result, the proportion of those reportedly belonging to a minority group (such as sexual or gender minority) seems implausibly high and associations between minority status and psychosocial problems are overestimated. In relation to gender minorities specifically, such distortion of data may risk a perception that in society gender minorities are victims rather than active subjects participating in building the adolescent community. Particularly considering the excessive media coverage of gender identity issues (Marchiano, 2017), gender identity may well be a topic which tempts adolescents to give facetious responses. Hence some studies have reported a strong association between reporting transgender identity and problems in sincerity (Kaltiala-Heino et al., 2019a, 2019b).

From the perspective of researchers, some tools are available to mitigate this issue. A simple sincerity screening question (such as "have you responded honestly to this survey?") has been suggested as a valid method for controlling such bias (Cornell et al., 2012; Fan et al., 2006). In the AMHCR study, a sincerity screening question was presented at the end of the survey as follows: "Have you responded in this survey as honestly as possible?", with response alternatives "yes" and "no". Of the participants, 87.7% answered yes, 2.8% those answered no and 9.5% omitted the sincerity question. Reportedly dishonest responders were not excluded from the analyses but honesty of responding was controlled for in the logistic regression analyses.

Additionally, excluding respondents reporting unlikely or extreme response combinations outside the focus of present interest on topics theoretically not related to the variables of interest for the actual study in question has been shown to be an appropriate method for controlling for facetious responding (Kaltiala-Heino & Lindberg, 2019; Robinson-Cimpian, 2014).

In the SHPS study, those who reported implausibly young age for being enrolled in the grades studied (<13 years), implausible height, were calculated to have extreme BMI (<10 or >40) or who reported both extremely poor hearing, sight and mobility were classified as facetious responders and excluded from further analyses. The final sample numbered 130,372 in total (for full details, see Kaltiala-Heino & Lindberg (2019).

3.3 Statistical analyses

In Study I, to study associations between transgender identity and severe suicidal ideation, logistic regression analyses were used. Severe suicidal ideation was entered as the dependent variable. Gender identity (cisgender vs. transgender) was entered as the independent variable, with cisgender as the reference category. In the first model, age, sex and honesty of responding were controlled for. Secondly, mother's and father's education and parental unemployment were added. Thirdly, depression was added, and finally peer rejection variables. Odds Ratios with 95% confidence intervals are reported. Cut-point for statistical significance was set at $p < 0.05$.

In Study II, associations between gender identity and involvement in bullying were first studied using cross-tabulations with chi-square statistics. Logistic regression was used to study multivariate associations. Gender identity was used as the

independent variable, with cisgender as the reference category. (1) being bullied and (2) bullying others were entered each in turn as the dependent variable. In the first model, age and sex were added as covariates, in the second model family characteristics were added and finally, in the third model, internalizing symptoms, externalizing behaviours, and involvement in bullying in the other role (as a bully when being bullied was studied, and vice versa) were added. Odds Ratios (OR) with 95% confidence intervals (95% CI) were given. Due to the large data the limit for statistical significance was set at $p < 0.001$. The analyses were run separately for the comprehensive school and upper secondary education groups.

In Study III, distributions of the outcome variables were calculated among the whole sample and by sex. Sexual experiences, experiences of subjection to sexual harassment and experiences of dating violence as a victim or a perpetrator were first compared between cisgender and transgender adolescents using cross-tabulations with chi-square statistics/Fisher's exact test where appropriate. Next, multivariate associations were studied using logistic regression. The sexual experiences, sexual harassment and dating violence variables were entered each in turn as the dependent variable. Gender identity was entered as the independent variable, age (continuous) and sex were controlled for. Next, the sincerity screening variable was added into the analyses, and finally depression (continuous). Odds Ratios (OR) with 95% confidence intervals (CI) are given. To avoid bias due to multiple testing, the cut-point for statistical significance was set at $p < 0.01$.

4 Results

4.1 Severe suicidal ideation

In the first step, prevalence of severe suicidal ideation was examined among the whole sample and between cisgender and transgender adolescents. Of the total population of study participants in the AMHCR study, 27 (2.0%) respondents reported severe suicidal ideation. No statistically significant difference regarding severe suicidal ideation was detected between females and males (females 2.3%, males 1.7%, $p = 0.284$). The study included 36 transgender identifying adolescents, of whom six (14.3%) reported severe suicidal ideation. Transgender adolescents reported severe suicidal ideation statistically significantly more than their cisgender peers (14.3% vs. 1.6%, $p < 0.001$).

In the next step, severe suicidal ideation was examined within the transgender group of the study population. Four models presented in Table 1 were created. In each model, risk factors/correlates of suicidality were added to examine how they interacted with the association between transgender identity and severe suicidal ideation.

In the first model (Table 1, Model 1), adjusted for age, sex and honesty of responding, a statistically significant association between transgender identity and severe suicidal ideation emerged (OR [95% CI] = 10.8 (4.0–28.9), $p < 0.001$). Each subsequent model included more confounding factors. In the

final model (Table 1, Model 4), adjusted for age, sex, honesty of responding, socioeconomic factors, depression, and gender minority prominent risk factors studied as per the GMSR measure, i.e., peer rejection and victimization, the association between transgender identity and severe suicidal ideation grew weaker, but remained nonetheless statistically significant (OR [95 % CI] = 5.3 (1.3–22.1), p = 0.024). In the final model, female sex as well as depression were also statistically significantly associated with severe suicidal ideation, while peer rejection and victimization variables were not.

Table 1. Odds Ratios (OR, 95 % CI) for severe suicidal ideation according to gender identity with cisgender gender identity as a reference group.

	Model 1 Age, sex, honesty of responding		**Model 2** Age, sex, honesty of responding, sociodemographic factors		**Model 3** Age, sex, honesty of responding, socioeconomic factors, depression		**Model 4** Age, sex, honesty of responding, socioeconomic factors, depression, peer rejection and victimization	
	OR (95 % CI)	*p*	OR (95 % CI)	*p*	OR (95 % CI)	*p*	OR (95 % CI)	*p*
Gender identity								
Cisgender	Ref.		Ref.		Ref.		Ref.	
Transgender	10.8 (4.0–28.9)	<0.001	9.9 (3.0–32.1)	<0.001	6.3 (1.6–24.9)	0.01	5.3 (1.3–22.1)	0.02
Age	1.5 (0.6–3.8)	0.39	1.1 (0.3–3.8)	0.84	1.6 (0.4–6.3)	0.52	1.4 (0.3–5.9)	0.66
Sex (natal)								
Boy	Ref.		Ref.		Ref.		Ref.	
Girl	1.3 (0.6–2.8)	0.53	1.3 (0.5–3.1)	0.56	0.3 (0.1–1.0)	0.06	3.3 (1.1–10.7)	0.04
Honesty of responding								
Reported dishonesty	0.9 (0.1–7.4)	0.89	–	1.00	–	1.00	–	1.00
Skipped sincerity question	0.7 (0.2–3.2)	0.66	0.6 (0.08-4.4)	0.59	1.1 (0.1–9.1)	0.93	1.1 (0.1–9.4)	0.92
Sociodemographics								
Father's education			–	1.00	–	1.00	–	1.00
Mother's education			–	1.00	–	1.00	–	1.00
Parents' unemployment			1.5 (0.6–3.8)	0.41	1.2 (0.4–3.3)	0.78	1.1 (0.4–3.4)	0.82
Depression					1.2 (1.2–1.3)	<0.001	1.2 (1.2–1.3)	<0.001
Peer rejection and victimization								
Frequently bullied							0.7 (0.1–5.2)	0.76
Frequently left out							1.9 (0.5–7.3)	0.38
Not having a close friend							1.4 (0.3–5.6)	0.67

In Model 1, transgender identity was entered after controlling for sex, age and honesty of responding. In Model 2, socioeconomic factors are added and in Model 3 depression. Finally, Model 4 additionally includes peer rejection and victimization factors.

4.2 Involvement in bullying

4.2.1 Prevalence of involvement in bullying

In the first step, prevalence of involvement in bullying was studied. Experiences of being bullied (4.9% vs. 1.8%) and reporting having bullied others (2.5% vs. 1.3%) were more common in the comprehensive education sample than in the upper secondary education sample. Next, prevalence of bullying involvement was studied according to gender identity. Overall, bullying involvement was reported more often by transgender adolescents than by cisgender adolescents. In more detail, experiences of being bullied were most reported by non-binary students (16.5% in the comprehensive education sample, 8.5% in the upper secondary education sample), followed by those identifying with the opposite sex (12.8% in the comprehensive education sample, 5.8% in the upper secondary education sample) and finally cisgender students (4.3% in the comprehensive education sample, 1.6% in the upper secondary education sample). Reports of perpetrating bullying followed a similar pattern, and were reported most by non-binary students, followed by those identifying with the opposite sex and finally cisgender students, in both samples (Table 2).

Table 2. Experiences of bullying and of bullying others according to gender identity, % (n).

	Cisgender	Opposite sex	Nonbinary gender	*p*
Comprehensive education				
Been bullied	4.3 (2 886)	12.8 (64)	16.5 (404)	<0.001
Bullied others	2.0 (1 356)	8.9 (44)	10.5 (256)	<0.001
Upper secondary education				
Been bullied	1.6 (899)	5.8 (18)	8.5 (152)	<0.001
Bullied others	1.0 (582)	4.9 (15)	7.9 (140)	<0.001

4.2.2 Being bullied

In the comprehensive education sample, non-binary identity first yielded over fourfold odds and opposite sex identification over twofold odds for being bullied in comparison to cisgender adolescents (Table 3, Model 1a). In the upper secondary education sample a similar pattern emerged, but the associations were even stronger (Table 3, Model 1b).

Next, three models were created for both samples. In each model, more covariates were added and controlled for (Table 3). In the final models (Table 3, Model 3a, Model 3b), after controlling for age, sex, family variables, alcohol consumption, mental health variables and perpetrating bullying, the association between opposite sex identity and being bullied diminished in both samples. The association between non-binary identity and being bullied decreased but remained statistically significant (OR [95% CI] = 1.98 (1.69–2.32), $p < 0.001$ in the comprehensive education sample, OR [95% CI] = 1.99 (1.50–2.62), $p < 0.001$ in the upper secondary education sample).

In both samples, being bullied was also associated with parental unemployment, difficulties communicating with parents, alcohol consumption and both mental health variables. In the upper secondary education sample, being bullied was additionally associated with respondent's mother only having basic education. Finally, a strong association between being bullied and having bullied others remained in the final model.

In both samples, being bullied was negatively associated with female sex, and positively associated with depression, anxiety and perpetrating bullying.

Table 3. Associations (Odds Ratios (OR) with 95% confidence intervals (CI)) between gender identity and being bullied among Finnish adolescents.

	Comprehensive education			Upper secondary education		
	Model 1[a]* OR (95% CI)	Model 2[a] OR (95% CI)	Model 3[a] OR (95% CI)	Model 1[b]** OR (95% CI)	Model 2[b] OR (95% CI)	Model 3[b] OR (95% CI)
Gender ID (ref. cisgender)						
Opposite sex	2.86 (2.02-4.04)	2.67 (1.89-3.82)	1.66 (1.13-2.49)	3.77 (2.10-6.78)	3.29 (1.82-5.94)	2.13 (1.01-4.17)
Nonbinary	4.22 (3.67-4.86)	3.52 (3.04-4.06)	1.98 (1.69-2.32)	5.21 (4.14-6.55)	4.35 (3.44-5.49)	1.99 (1.50-2.62)
Official gender female (ref. male)	0.76 (0.72-0.85)	0.73 (0.68-0.80)	0.54 (0.50-0.60)	0.64 (0.55-0.74)	0.60 (0.52-0.69)	0.64 (0.54-0.75)
Age	0.96 (0.90-1-03)	0.94 (0.88-1.01)	0.83 (0.78-0.91)	1.04 (0.95-1.13)	0.99 (0.90-1.08)	0.94 (0.85-1.03)
Mother only basic education (ref. other)		1.22 (1.03.1.45)	1.17 (0.97-1.40)		1.82 (1.42-2.36)	1.58 (1.18-2.10)
Father only basic education (ref. other)		1.10 (0.95-1.28)	1.01 (0.87-1.19)		1.26 (1.00-1.58)	1.18 (0.92-1.50)
Nuclear family (ref. no)		1.09 (0.99-1.19)	0.97 (0.88-1.06)		1.19 (1.03-1.39)	1.11 (0.95-1.30)
Parental unemployment (ref. no)		1.36 (1.25-1.49)	1.22 (1.13-1.33)		1.35 (1.17-1.57)	1.25 (1.07-1.47)
Communication difficiculties with parents (ref. no)		2.51 (2.24-2.82)	1.31 (1.15-1.49)		2.45 (2.01-3.02)	1.37 (1.09-1.74)
Alcohol weekely (ref. no)			1.30 (1.10-1.55)			1.30 (1.05-1.60)
Depression (continuous)			1.18 (1.14-1.23)			1.16 (1.08-1.24)
GAD-7 (continuous)***			1.08 (1.06-1.09)			1.07 (1.04-1.09)
Bullied others at least once a week (ref. no)			9.20 (7.96-10.64)			46.97 (37.84-58.31)

* Estimates in unadjusted model: Opposite sex OR (95% CI) = 2.73 [CI 1.93 – 3.86], nonbinary OR (95% CI) = 4.09 [3.55 – 4.70]

** Estimates in unadjusted model: Opposite sex OR (95% CI) = 3.51 [1.96 – 6.30], nonbinary OR (95% CI) = 5.01 [4.02 – 6.34]

*** Range of GAD-7 was 0–21. The GAD-7 items describe the most prominent diagnostic features of the DSM IV generalized anxiety disorder.

4.2.3 Bullying others

Table 4 presents three models exploring the associations between the gender identity subgroups and perpetrating bullying in both samples. In each model, more covariates have been added and controlled for. Among the comprehensive education sample (Table 4, Model 3), after controlling for age, sex, family variables, alcohol consumption, experiences of being bullied and mental health variables, the associations between perpetrating bullying and both opposite sex identification (OR [95% CI] = 3.91 (2.47–6.19), $p < 0.001$) and non-binary identity (OR (95% CI) = 2.58 (2.07–3.21) remained statistically significant. In the upper secondary education sample, the association between perpetrating bullying and opposite sex identification levelled out, but the association remained statistically significant among non-binary adolescents (OR [95% CI] = 4.01 (2.91–5.52), $p < 0.001$).

In both samples, perpetrating bullying was associated with difficulties in communicating with parents, alcohol consumption and also with having been subjected to bullying. Additionally, in the comprehensive education sample, perpetrating bullying was associated with respondent's father having only basic education and anxiety and with respondent's mother having only basic education in the upper secondary education sample.

In both samples, perpetrating bullying was negatively associated with female sex and positively associated with difficulties in communicating with parents, alcohol consumption and having been bullied. Of the mental health variables, only anxiety was associated with perpetrating bullying and only in the comprehensive school sample.

Table 4. Associations (Odds Ratios (OR) with 95% confidence intervals (CI)) between gender identity and perpetrating bullying among Finnish adolescents.

	Comprehensive education			Upper secondary education		
	Model 1[a]* OR (95% CI)	Model 2[a] OR (95% CI)	Model 3[a] OR (95% CI)	Model 1[b]** OR (95% CI)	Model 2[b] OR (95% CI)	Model 3[b] OR (95% CI)
Gender ID (ref. cisgender)						
Opposite sex	6.13 (4.09- 9.19)	5.56 (3.69-8.39)	3.91 (2.47-6.19)	5.62 (2.85-11.12)	5.03 (2.54-9.99)	3.15 (1.38-7.19)
Nonbinary	6.00 (4.98-7.24)	4.83 (3.98-5.86)	2.58 (2.07-3.21)	8.61 (6.71-11.05)	7.24 (5.60-9.35)	4.01 (2.91-5.52)
Official gender female (ref. male)	0.28 (0.25-0.32)	0.26 (0.23-0.30)	0.25 (0.21-0.29)	0.18 (0.14-0.23)	0.17 (0.13-0.21)	0.19 (0.15-0.25)
Age	1.13 (1.03-1.24)	1.09 (1.00-1.20)	1.04 (0.94-1.15)	1.07 (0.96-1.20)	1.02 (0.90-1.14)	0.96 (0.84-1.08)
Mother only basic education (ref. other)		1.36 (1.07-1.72)	1.24 (0.96-1.59)		2.01 (1.45-2.78)	1.51 (1.01-2.21)
Father only basic education (ref. other)		1.20 (1.06-1.36)	1.29 (1.03-1.60)		1.12 (0.84-1.50)	0.96 (0.69-1.34)
Nuclear family (ref. no)		1.21 (1.06-1.38)	1.12 (0.98-1.28)		1.13 (0.94-1.37	1.05 (0.85-1.29)
Parental unemployment (ref. no)		1.21 (1.06-1.37)	1.08 (0.94-1.23)		1.17 (0.98-1.41)	1.03 (0.84-1.27)
Communication difficulities with parents (ref. no)		2.71 (2.28 -3.21)	1.59 (1.31-1.92)		2.62 (2.03-3.38)	1.83 (1.35-2.49)
Alcohol weekely (ref. no)			3.99 (3.34-4.77)			2.85 (2.28-3.56)
Depression (continuous)			1.02 (0.95-1.08)			0.96 (0.87-1.06)
GAD-7 (continuous)***			1.04 (1.02-1.06)			1.03 (0.99-1.06)
Been bullied at least once a week (ref. no)			8.90 (7.68-10.30)			45.68 (36.73-56.82)

* Estimates in unadjusted model: Opposite sex OR (95% CI) = 4.77 [3.21 – 7.10], nonbinary OR (95% CI) = 5.10 [4.25 – 6.13]

** Estimates in unadjusted model: Opposite sex OR (95% CI) = 4.31 [2.20 – 8.44], nonbinary OR (95% CI) = 7.57 [5.93 – 9.66]

*** Range of GAD-7 was 0–21. The GAD-7 items describe the most prominent diagnostic features of the DSM IV generalized anxiety disorder.

4.3 Normative and negative sexual experiences

Among all study participants in the AMCHR sample, types of normative sexual experiences reported grew scarcer according with increasing intimacy.

Table 5 presents reported prevalence of dating and sexual experiences, sexual harassment and experiences of dating violence among cisgender and transgender adolescents and a comparison between the two groups.

Regarding experiences of love and romance and sexual experiences, no statistically significant differences emerged. Of the negative sexual experiences elicited, transgender adolescents reported having been subjected to sexual coercion more often than their cisgender peers (15.4% vs. 5.0%, $p = 0.01$), as well as having perpetrated dating violence (10.3% vs. 2.6%, $p = 0.02$).

Table 6 presents the results of the logistic regression analyses. In the first analysis (Table 6, Model 1), transgender identity was associated with experiences of love and romance, subjection to sexual coercion and both subjection to and perpetration of dating violence. However, after sex, age, honesty of responding and depressive symptoms had been controlled for (Table 6, Model 3), all associations except having had a crush or been in love and subjection to sexual coercion levelled out.

Table 5. Sexual experiences, subjection to sexual harassment and experiences of dating violence (n/N (%)) among cisgender and transgender pupils.

Table X. Sexual experiences, subjection to sexual harassment and dating violence experiences (n/N (%)) among cisgender and transgender pupils.			
	Cisgender	Transgender	
			p
Love and romance			
Has had a crush or been in love	1027/1270 (80.9)	27/40 (67.5)	0.034
Ever in a steady relationship	628/1269 (49.5)	24/36 (66.7)	0.03
Sexual experiences			
Kissing	645/1253 (51.5)	23/39 (59.0)	0.224
Light petting	467/1234 (37.8)	15/39 (38.5)	0.53
Heavy petting	328/1221 (26.9)	12/38 (31.6)	0.316
Intercourse	231/1241 (18.6)	8/38 (21.1)	0.417
Heavy petting or intercourse	342/1207 (28.3)	13/37 (35.1)	0.233
Subjection to sexual harassment			
Gender harassment	294/1259 (23.4)	10/39 (25.6)	0.432
Unwelcome attention	195/1257 (15.5)	8/39 (20.5)	0.257
Sexual coercion	62/1246 (5.0)	6/39 (15.4)	0.014
Dating violence			
Subjection to dating violence	44/1200 (3.7)	4/39 (10.3)	0.06
Perpetration of dating violence	31/1192 (2.6)	4/39 (10.3)	0.02

Table 6. Odds Ratios (95% confidence intervals) for dating and sexual experiences, sexual harassment and dating violence among transgender identifying 15-year-old adolescents as

	Model 1. Controlled for sex and age.			Model 2. Controlled for sex, age and reported honesty of responding.			Model 3. Controlled for sex, age, honesty and depressive symptoms.		
	cisgender	transgender	*p*	cisgender	transgender	*p*	cisgender	transgender	*p*
Love and romance									
Has had a crush or been in love	ref	0.5 (0.3-1.0)	0.04	ref	0.5 (0.3-1.0)	0.05	ref	0.5 (0.2-0.9)	0.03
Ever in a steady relationship	ref	2.3 (1.1-4.6)	0.02	ref	2.2 (1.1-4.6)	0.03	ref	1.6 (0.8-3.4)	0.20
Sexual experiences									
Kissing	ref	1.4 (0.7-2.7)	0.31	ref	1.3 (0.7-2.5)	0.41	ref	1.0 (0.5-2.0)	0.93
Light petting	ref	1.1 (0.6-2.1)	0.85	ref	1.1 (0.5-2.0)	0.88	ref	0.8 (0.4-1.6)	0.54
Heavy petting	ref	1.3 (0.7-2.7)	0.43	ref	1.3 (0.7-2.7)	0.43	ref	1.0 (0.5-2.19	0.98
Intercourse	ref	1.2 (0.6-2.8)	0.59	ref	1.3 (0.6-2.8)	0.57	ref	0.9 (0.4-2.1)	0.83
Heavy petting or intercourse	ref	1.5 (0.7-2.9)	0.29	ref	1.4 (0.7-2.9)	0.31	ref	1.1 (0.6-2.3)	0.73
Subjection to sexual harassment									
Gender harassment	ref	1.1 (0.5-2.3)	0.79	ref	1.0 (0.5-2.2)	0.94	ref	0.7 (80.3-1.5)	0.32
Unwelcome attention	ref	1.3 (0.6-2.9)	0.56	ref	1.3 (0.6-3.1)	0.48	ref	0.9 (04-2.2)	0.87
Sexual coercion	ref	3.2 (1.3-8.1)	0.01	ref	3.2 (1.3-8.1)	0.01	ref	2.3 (0.9-6.0)	0.09
Dating violence									
Subjection to dating violence	ref	3.1 (1.0-9.0)	0.04	ref	2.6 (0.9-8.0)	0.09	ref	1.4 (0.4-4.7)	0.56
Perpetration of dating violence	ref	4.4 (1.5-13.3)	0.01	ref	4.3 (1.4-13.6)	0.01	ref	2.2 (0.6-7.6)	0.21

5 Discussion

5.1 Severe suicidal ideation

Study I examined whether there was a relationship between transgender identity and severe suicidal ideation in a Finnish general population sample. A novel contribution was to control for confounding with a variety of factors associated with suicidality, especially peer rejection, a prominent gender minority specific risk factor as per the GMSR measure (Hendricks & Testa, 2012).

As expected, a statistically significant correlation between transgender identity and severe suicidal ideation was found. The results corroborate those of earlier studies (Eisenberg et al., 2017; Johns et al., 2019; Perez-Brumer et al., 2017; Toomey et al., 2018).

Of note, all studies mentioned, including the present study, used slightly different measures. The measures used in the present study are stated above. In the study by Eisenberg et al. (2017) self-harm during the past year, lifetime suicidal ideation and suicide attempts were elicited, all of which the transgender adolescents in their study reported more commonly than their cisgender age peers. In the study by Johns et al. (2019), suicidal ideation and suicide attempts during the past 12 months were elicited. Both were more commonly reported by transgender adolescents. In the study by Perez-Brumer et al. (2017) past 12-month suicide ideation was elicited. As in the present study, the

association between transgender identity and suicidal ideation was attenuated after controlling for depressive symptoms and victimization, although it remained statistically significant. Finally, in the study by Toomey et al. (2018), lifetime suicide attempts were elicited, and lifetime suicide attempts were associated with transgender identity.

In two of the aforementioned studies, lifetime (rather than current) suicidal ideation and/or behaviour were elicited. Thus, it remains unclear at which point in the respondent's life the said ideation or behaviour occurred and whether the respondent identified as transgender at that point. Moreover, as all studies used slightly different measures of suicidality, direct comparisons are impossible. However, all results point towards increased suicidal ideation and behaviour among transgender adolescents.

In crude estimates, transgender identity first yielded over ten-fold ORs for severe suicidal ideation. After confounding was controlled for, the association grew weaker, although it remained statistically significant in the final analyses.

Depression is a risk factor for suicidality (Franklin et al., 2017), so unexpectedly, depression was statistically significantly associated with severe suicidal ideation in the present study. Transgender identity has previously been associated with suicidality, yet most studies with population-based samples have not been able to control for it (e.g., Johns et al., 2019; Toomey et al., 2018).

Similarly, as per the GMSR measure and previously observed correlates of suicidality among transgender adolescents (Barboza et al., 2016; Rood et al., 2015), peer rejection (being bullied, being excluded, not having close friend) was controlled for. Surprisingly, peer rejection variables were not statistically significantly associated with severe suicidal ideation in the present data, and they moderated the association between

transgender identity and severe suicidal ideation only slightly. In other words, transgender identity was in itself associated with severe suicidal ideation, even in the presence of peer rejection variables, suggesting that peer rejection may not play a particularly strong role in the increased suicidality among transgender adolescents.

As has been previously reported (Cash & Bridge, 2009), female sex was associated with severe suicidal ideation, even when gender identity was accounted for. The association between female sex and severe suicidal ideation even strengthened after all confounding was controlled for.

Transgender identity is much publicized in various forums, including traditional and social media (Marchiano, 2017). This observation, considered together with the rising referral rates to specialized gender clinics (De Vries et al., 2011; Kaltiala et al., 2020; Wood et al., 2013) as well as the high prevalence of transgender identity in survey studies (Zucker, 2017) could suggest a more inclusive social climate regarding gender minorities, thus reducing stigma and making it easier for transgender adolescents to "come out". This could be expected to reduce the association between transgender identity and suicidality.

The GMSR measure also suggests that having one's gender identity not affirmed by others could cause distress. This could, for example, manifest as not using the preferred pronouns chosen by the transgender adolescent. Indeed, one study (Russell et al., 2018) found that chosen name use was linked to lower suicidality among transgender adolescents. Unique to the Finnish language, at least in comparison to English and many languages spoken elsewhere in Europe, our language has only one personal pronoun signifying both masculine and feminine. Thus, it is quite

impossible to be addressed by wrong pronouns, which takes at least one form of identity non-affirmation out the equation.

Despite these factors, transgender identity was associated with severe suicidal ideation. Perhaps the transgender identity reported by at least some adolescents does not represent an achieved identity, but rather an identity crisis and the associated inner turmoil. Or some adolescents could see transgender identity as a solution to their own insecurities and psychological malaise that are also the source of suicidal ideation. However, as the data are cross-sectional, causalities cannot be concluded.

5.2 Involvement in bullying

Study II examined whether transgender identity is associated with involvement in bullying and whether the possible associations differ between opposite sex identifying and non-binary individuals, in a large, population-based sample of middle and late adolescents.

The results corroborate earlier research in that transgender identity was generally associated with subjection to bullying (Bishop et al., 2020; Day et al., 2018; Eisenberg et al., 2019; Johns et al., 2019).

However, direct comparisons to earlier research are not possible. In the study by Bishop et al. (2020), respondents were asked how often they had experienced bullying or harassment related to their weight or size rather than bullying in general. Also, gender identity subgroups were not differentiated, as was the case in the study by Johns et al. (2019) and that by Day et al. (2018).

In the study by Eisenberg et al. (2019), those with intersecting gender and sexual minority identity were more likely to experience bullying than those with either gender or sexual minority identity. All groups were more likely to experience bullying than were heterosexual cisgender adolescents. In the present study, sexual orientation was not elicited. Thus, whether those adolescents in Finnish population with an intersecting gender and sexual minority identity are especially susceptible to bullying remains unclear.

Bullying is an aggressive behaviour manifesting in various forms and is often directed towards those perceived to be different (Jones et al., 2018; Price-Feeney et al., 2018). Transgender adolescents may display behaviour or appearances not traditionally associated with their sex, thus making them stand out to bullies. Additionally, aggressive behaviour towards gender minorities could stem from heterosexism, which refers to subconscious efforts to maintain traditional male and female roles in society (Chesir-Teran, 2003; Pina et al., 2009; Street et al., 2007). On the other hand, it is also possible that the internal stress evidently experienced by many transgender adolescents could lead to constant and unwarranted vigilance and anticipation of being victimized, thus risking the development of hostile attribution bias**.** Hostile attribution bias (Orobio De Castro et al., 2002) could then predispose transgender adolescents to perceive hostile cues in the actions of their peers – bullying – when none were actually intended.

The data also showed that transgender identity was generally associated with bullying perpetration. Additionally, the association was stronger than that between being bullied and transgender identity. Engaging in bullying others further subjects gender minority adolescents to negative outcomes, as it has been associated, for example, with substance abuse and delinquency (Liang et al., 2007). Comparisons with earlier research are

impossible as this subject has not been addressed in earlier studies.

From a developmental standpoint adolescence is a challenging period of life, during which adolescents struggle with a series of developmental tasks (Havighurst, 1972). These developmental tasks include, for example, identity achievement and achieving emotional independence from parents, a process during which peer relations assume a markedly important role in the adolescent's life (Laursen & Hartl, 2013). Based on currently available research, it is unknown how transgender identity affects identity work during the adolescent years. It could very well add a layer of complexity, predisposing adolescents to developmental challenges, which perhaps manifest as bullying others, a behaviour suggested to act as a coping mechanism (Eisenberg et al., 2016).

When comparing gender identity subgroups, non-binary identity was more strongly associated with involvement in all forms of bullying than opposite sex identity. Non-binary gender identity may lie somewhere between female and male sex, outside the female-male spectrum altogether or even vary across time. Hence it is not unreasonable to think that the development of non-binary identity poses additional developmental challenges for the adolescent in comparison to identifying with the opposite sex. For example, non-binary identity could delay the achievement of so-called transgender identity milestones, such as first living in the gender role felt within (Wilkinson et al., 2018) or interfere with the maturation of identity. Failing to progress towards identity achievement has been associated with negative mental health outcomes such as depression (Luyckx et al., 2006), which is a correlate of involvement in bullying (Klomek et al., 2008).

Finally, the data showed that involvement in bullying was less commonly reported by adolescents in the upper secondary education sample across all gender identities. This corroborates earlier research claiming that involvement in bullying decreases as adolescents progress towards adulthood (Coulter et al., 2018). In the upper secondary education sample, the association between opposite sex identity and subjection to bullying also levelled out after confounding was accounted for.

Similarly, perpetration of bullying was less commonly reported by non-binary adolescents in the secondary education sample (i.e., among older adolescents). However, even though reported prevalence of bullying perpetration was lower in the upper secondary education sample, the associations between gender identity and perpetration of bullying were stronger than in the comprehensive education sample. Similarly, the correlation between subjection to bullying and perpetration of bullying was stronger among older than younger adolescents. Being a victim of bullying correlates with the greatest accumulation of mental health problems.

Perhaps these non-binary individuals still involved in bullying in late adolescence are those with the most unresolved developmental challenges.

Involvement in bullying in general was associated with mental health variables, as has already been established (Heikkilä et al., 2013; Kurki-Kangas et al., 2019). Subjection to bullying was associated with parental unemployment, perpetrating bullying was associated with difficulties in communicating with parents while both were associated with parents' low education and alcohol abuse.

It is known that involvement in problem behaviours is more common among children of low socioeconomic families

(Knaappila et al., 2019). These observations underline that interactions with peers and adolescents' interpretations of those interactions are heavily influenced by their family backgrounds, and this needs to be taken into account in interventions in adolescent psychosocial problems such as bullying.

5.3 Normative and negative sexual experiences

Study III compared normative as well as negative sexual experiences between transgender adolescents and their cisgender peers in a Finnish population-based sample. A novel contribution of the present study was to compare sexual experiences of transgender and cisgender adolescents in a population-based sample.

Transgender adolescents presented with neither delayed nor excessive experiences of various normative sexual experiences. Earlier research offers mixed results. The results of the present study are in line with those of Veale et al. (2016), while Korchmaros et al. (2015) found that the sexual and gender minorities in their sample reported more sexual experiences than their cisgender peers. However, in their study, sexual and gender minorities were grouped together, thus rendering the results inapplicable to the wider transgender community. In clinical samples, transgender adolescents have reported fewer sexual experiences than their cisgender peers (Bungener et al., 2017; Kaltiala-Heino et al., 2019b). Transgender adolescents referred to gender clinics often present with concomitant mental health disorders (Bechard et al., 2017; Chodzen et al., 2019), which could both inhibit or accelerate the accumulation of sexual experiences, for example due to sexual risk taking (Savioja et al., 2015) or insecurities related to gender dysphoria. Thus, the present results offer evidence to suggest that transgender

identity need not interfere with sexual development and health and that at least in the domain of sexuality, transgender adolescents seem to be developing apace with their cisgender peers.

Regarding negative sexual experiences, transgender adolescents reported subjection to sexual coercion more frequently than their cisgender peers. In logistic regression analysis, transgender identity was associated with subjection to sexual coercion after confounding by demographics and honesty of responding had been accounted for. After further accounting for depression, the association attenuated to a statistically non-significant level. Earlier studies have reported that transgender adolescents are subjected to sexual harassment more often than their cisgender peers (Devís-Devís et al., 2017; Mitchell et al., 2014; Toomey et al., 2012; Ybarra et al., 2015). However, these studies were not based on population-based samples and did not differentiate between different types of sexual harassment, making comparisons difficult and generalization of results challenging. Additionally in the present study, no differences in reported rates of experiences of gender harassment and unwelcome sexual attention according to gender identity were detected. Similarly, subjection to dating violence was equally common among transgender and cisgender adolescents. These findings do not appear to support the previously mentioned notion that victimization experienced by transgender adolescents could stem from heterosexism.

Finally, perpetration of dating violence was more commonly reported by transgender than by cisgender adolescents in the present sample. This behaviour could signify “acting out” due to transgender adolescents’ own insecurities and psychological malaise. Like experiences of sexual coercion, however, the association did not remain statistically significant after confounding by depression was controlled for. It seems that

depression, rather than gender identity, is associated with subjection to sexual harassment and perpetration of dating violence and is the main issue of the transgender adolescents of the present study.

In studies that use peer nomination to identify bullies, bullying has not been associated with depression whereas self-reported perpetration of bullying has (Camodeca & Goossens, 2005; Juvonen et al., 2003; Wienke Totura et al., 2009). This suggests that depressed individuals may perceive themselves and their actions in a negative light, exaggerating their self-reported participation in aggressive behaviours. The association between self-reported perpetration of dating violence and transgender identity in the present sample could similarly relate to negative self-appraisals due to developmental difficulties and mental health issues, even if depression was indeed controlled for.

In conclusion, from the perspective of sexuality, transgender identity appears to be a normative variation of gender identity, rather than one that needs special attention and is associated with psychopathology. However, the findings of Studies I and II do not support this notion.

5.4 Methodological considerations

Some limitations should be considered when interpreting the results of the present study. Firstly, and most importantly, as the data were cross-sectional, causalities cannot be concluded.

In the AMHCR sample (Studies I, III), the small sample of transgender adolescents prevented us from comparing gender identity subgroups. Similarly, in the SHPS sample (Study II), the number of transgender adolescents who reported having

participated in bullying as aggressors was rather small. However, adequate cell sizes for statistical validity were achieved.
Some limitations regarding survey measures must be conceded. In the AMHCR sample, perpetration of sexual harassment was not elicited, thus comparison of perpetration of sexual harassment between transgender and cisgender adolescents was not possible. Suicidality was elicited with only one item taken from the BDI-13, that regarding suicidal ideation, thus no data on suicide attempts were available. In the SHPS sample, the survey items did not differentiate between different types of bullying. Additionally, alcohol consumption was the sole externalizing symptom elicited. Thus, whether other types of externalizing symptoms (such as symptoms related to ADHD, see Cuba Bustinza et al. (2022) were common in the study population and to what extent they moderate the association between transgender identity and bullying involvement, remains unclear. Finally, no survey items in either the AMHCR or SHPS elicited whether those study participants who reported transgender identity actually lived according to the gender identity felt within (i.e., whether gender expression matched inner perception of gender), if they were "out". Thus, it was not possible to assess whether identity concealment (Hendricks & Testa, 2012) moderated the associations between transgender identity and the outcomes studied. Similarly, whether transgender identifying adolescents experienced gender dysphoria and if so, had sought medical advice (or seen a medical professional regarding any mental health issue), or, for example, whether attitudes within the adolescent's family were inclusive, remains unclear.

The present study also has several strengths. Both the AMHCR and SHPS samples comprise an unselected population of Finnish adolescents. This is especially true for the whole of the AMCHR sample and the comprehensive education portion of the SHPS sample, both of which only included students enrolled in the mandatory nine-year-long education.

Gender identity as a topic is susceptible to facetious responding in survey studies (Cornell et al., 2012; Fan et al., 2006; Kaltiala-Heino et al., 2019a; Robinson-Cimpian, 2014). To enhance the validity of the data, a sincerity screen question was included in the AMHCR study while in the SHPS study the issue of facetious responders was addressed by excluding those respondents who reported unlikely combinations or extreme outliers. To ensure respondents knew whether sex or gender identity was elicited, the so-called two-step process was used. However, the self-reported transgender identity represents what the respondent felt at the time, there is no information regarding the extent to which identity work had taken place, whether the self-reported identity represented an identity achieved, a fresh identity crisis or exploration of identities. Thus, the transgender adolescents in the present sample may represent various stages of identity development.

Finally, in the logistic regression analyses, a wide range of covariates associated with mental health and transgender identity were controlled for, allowing us to estimate the association between gender identity and the outcomes of interest more closely. However, despite the relatively large study sample, the small number of cases recorded for some subgroup analyses may have resulted in insufficient statistical power and type II errors. Given the many statistical comparisons performed in our study, the additional risk of chance findings and Type I error cannot be excluded. These risks were accounted as much as possible in the analyses.

6 Implications

6.1 Implications for practice

As widely as gender identity is portrayed in various outlets (Marchiano, 2017), it is only natural that it should fascinate and affect the experiences and thoughts of developing adolescents. It is important to create an environment that allows adolescents to freely express themselves and explore identity alternatives. Such explorations do not unequivocally represent an immediate need for interventions; adults must allow adequate time and peace for the adolescent to work on their identity.

Persistent transgender identification in childhood or transgender identification associated with gender dysphoria during or after puberty may warrant referral to either of the two specialized gender clinics in Finland (Palveluvalikoima: Council for Choices in Health Care in Finland, 2020). However, concurrent mental health issues should be treated before drawing conclusions about the stability of gender identity and considering interventions such as puberty blockers (Palveluvalikoima: Council for Choices in Health Care in Finland, 2020).

Transgender adolescents struggle with adversities in many aspects of well-being, such as peer relations (Eisenberg et al., 2019), mental health (Johns et al., 2019) (Perez-Brumer et al., 2017) and substance use (Day et al., 2017), much more than their cisgender peers. Professionals working with transgender adolescents should actively consider the health and well-being of

this population and offer psychosocial support as well as arranging appropriate interventions. Schools should actively work towards eliminating bullying and harassment (for example, see https://okm.fi/kiusaamisen-ehkaisemisohjelma), whether this is related to gender identity or not.

6.2 Implications for research

Future studies should consider including gender minority specific measures in study questionnaires, as per the GMSR measure (Hendricks & Testa, 2012). For example, it is currently unknown to what extent internalized transphobia or identity concealment moderate the associations between transgender identity and mental health outcomes. Similarly, survey items should elicit whether those transgender adolescents who participate in survey studies alongside their cisgender peers suffer from gender dysphoria. If the assumption that not all transgender individuals suffer from gender dysphoria (Coleman et al., 2012) is correct, the results from cross-sectional studies may overestimate the association between transgender identity and various adverse outcomes, as these are likely overrepresented among those who suffer from gender dysphoria (Camodeca & Goossens, 2005; Juvonen et al., 2003; Wienke Totura et al., 2009).

Additionally, identity development among transgender adolescents should be examined in more detail. Currently it is unclear how self-reported transgender identity relates to normative identity development, whether it represents an achieved identity or more unstable phases of identity development. Failing to progress towards identity achievement during the adolescent years is associated with psychopathology (Ferrer-Wreder & Kroger, 2019). Thus, when studying associations between transgender identity and various adverse

outcomes, results should be examined in the light of identity development.

According to currently available research (Burgwal et al., 2019; Dank et al., 2014), including the present study, non-binary identity seems particularly susceptible to various negative mental health outcomes. Thus, survey items should elicit gender identity subgroups in enough detail.

Currently it is unknown whether transgender identity represents normal variation or whether it is actually, at least in some cases, related to psychological distress, such as depression. Thus, longitudinal study designs are warranted.

7 Conclusion

The results indicate that transgender identity is associated with severe suicidal ideation and involvement in bullying, both as a victim and as a perpetrator. These findings were true even when common covariates of the examined outcomes were controlled for. Of special interest is the role of peer rejection, which in the present data was not crucial in explaining severe suicidal ideation among the transgender adolescents in the sample. Perhaps intrinsic factors such as internalized transphobia and identity concealment play a more important role in explaining mental health disparities between transgender and cisgender adolescents. Additionally, it is impossible to rule out that transgender identity could represent psychological maladjustment and developmental challenges, at least in some cases.

On the other hand, the transgender adolescents in the present study did not differ from their cisgender peers regarding normative and negative sexual experiences. These findings support the notion that transgender identity is a variation of normative identity development and thus does not automatically require special attention or interventions. Reported experiences of subjection to sexual coercion and perpetration of dating violence mediated after depression was controlled for, suggesting that transgender identity is associated with depression, a finding that recurred in all the three studies comprising this dissertation.

In any case, suicidality, involvement in bullying and depression are major health concerns which should be taken into consideration when assessing the needs of transgender identifying adolescents. Future studies should consider using longitudinal study designs to assess causalities.

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Transgender identity is associated with severe suicidal ideation among Finnish adolescents

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Abstract

Objectives: Emerging evidence reveals disparities in suicidal behaviour and ideation exist between transgender and cisgender youth. It has been hypothesized that certain gender minority specific risk factors, such as experiences of victimization, could partially explain the mental health disparities between transgender and cisgender youth. We set out to explore whether transgender identity is associated with severe suicidal ideation among Finnish adolescents and whether the possible association persist when a range of covariates is controlled for.
Methods: The study included 1,425 pupils (mean age [SD] =15.59 [0.41]) who participated in the study during a school lesson. Logistic regression was used to study associations between transgender identity and severe suicidal ideation.
Results: Four models, each adding more covariates, were created. The final model revealed a statistically significant association between transgender identity and severe suicidal ideation, even though the association grew weaker as more covariates were added and controlled for.
Conclusions: The results indicate that transgender identity is associated with severe suicidal ideation even after prominent covariates or risk factors of suicidal behaviour and ideation have been taken into account.

Keywords: adolescent; gender minority; severe suicidal ideation; suicidality; transgender.

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Introduction

The term *transgender* refers to individuals whose gender identity does not align with their birth assigned sex. For example, this includes, but is not limited to transmen (female to male), transwomen (male to female) and non-binary/gender nonconforming (gender identity does not align with either male or female identity) gender identities [1]. For comparison, *cisgender* refers to people whose gender identity aligns with their biological sex.

In spite of suggestions for standardized suicidality related nomenclature [2], the use of terminology varies widely within the field of medical research [3]. Recognizing this challenging task of classifying and defining suicide-related behaviour and ideation, we only classify the terms central to our study. By *suicidal behaviour* we mean *suicide* (fatal act with intention to die) and *suicide attempt* (non-fatal act with intention to die) and by *suicidal ideation* we refer to *passive suicidal ideation* (wishing one was dead without intent or plan to take one's life) and *active/severe suicidal ideation* (active thoughts about killing oneself accompanied by plans and will to do so given the chance) and finally we use *suicidality* to encompass all of the aforementioned behaviours and ideations. When referring to other research we use the nomenclature chosen by the respective authors of those studies.

The gender minority stress and resilience (GMSR) model [4] posits certain gender identity related external and internal stressors affect the mental health of transgender people. The external stressors include gender-based victimization, gender-based rejection, gender-based discrimination and identity nonaffirmation. The internal stressors include negative expectations of future events, internalized transphobia and nondisclosure of one's identity. The external and internal stressors could then cause distress and affect mental health, increasing, for example, the risk of suicidality.

Recent research suggests many mental health disparities exist between transgender and non-transgender youth, including disparities in suicidal behaviour and ideation. A literature review summarizing trans youth-related research from 2011 to 2016 [5], found that trans youth are at an elevated risk for depression, suicidality, self-harm and eating disorders. However, most studies from this period made use of clinical samples, leaving little chance for the generalization of the results to population level.

Since 2016, some cross-sectional studies with large population-based samples exploring suicidality among trans youth have been published. The results report that suicide risk [6], past 12-month suicidal ideation [7], lifetime suicidal ideation [8] and lifetime suicide attempt [8, 9] were more likely among transgender youth than non-transgender youth. Online questionnaire studies with selected samples have reported similar results [10, 11].

Regarding possible gender minority specific predictors of suicidality, Testa et al. [12] explored the role of factors suggested in the GMSR model in relation to suicidal ideation among transgender youth in a convenience sample and found that rejection and victimization were related to increased suicidal ideation.

Similarly, Kuper et al. [13] in a selected sample consisting of self-identified non-cisgender study participants recruited primarily through social media, found a link between gender-related victimization and suicidal behaviour (suicide attempt and ideation, positive suicide risk screen) among transgender youth. In a population-based study of high school students, Perez-Brumer et al. [7] found that among transgender youth victimization was associated with higher odds of suicidal ideation. However, as the authors noted, the minority stress factors explained variance in suicidality only partially. These results are in line with those of Franklin et al. [14], who found in a meta-analysis of risk factors for suicidal thoughts and behaviours among adolescents at large, that demographic, interpersonal and mental health risk factors only partially explained variance in suicide-related outcomes among (cisgender) adolescents.

Even though research points in the direction of increased suicidality among trans youth, the varying terminology and/or measures related to suicidality between various studies (see earlier) increase the difficulty of establishing associations between, for example, gender identity and suicidal ideation, as a single study only provides cumulative data towards specific outcome(s) and different outcomes are not necessarily comparable.

All population-based studies mentioned above were conducted in the USA and only one of them explored the relation of minority stress factors to suicidal behaviour [7]. In addition, cultural differences, for example between North America and Northern Europe, may affect suicidal behaviour among transgender youth. Therefore, studies outside the USA are warranted. Also, some authors of the US based studies mention the possibility that the individuals at highest risk for suicidal behaviour may have dropped out of school and thus the analyses may underestimate the association between transgender identity and suicidal behaviour. In Finland, comprehensive school is mandatory for nine years (from age 7 to 16) and over 99% of children of school age are enrolled in school, which makes Finnish school-based samples very representative, as is the case throughout the Nordic countries. Therefore, comprehensive school-based studies from Finland are highly representative of the unselected adolescent population.

To summarize, recent research suggests that transgender adolescents as a whole (i.e. other than cisgender adolescents) display elevated levels of suicidality when compared to their cisgender peers. This is attributed to gender minority-related stressors, particularly peer rejection and victimization, but most studies on gender identity and suicidality have not explored the role of peer rejection when studying associations between gender identity and suicidality.

In this study we aim to answer the following questions: 1) is there a relationship between transgender identity and severe suicidal ideation in general adolescent population, and 2) does the possible association persist when the most prominent transgender-related risk factor, namely experiences of peer rejection, is controlled for?

We expect to find that severe suicidal ideation will be more common among transgender than cisgender youth, but that the association between transgender identity and severe suicidal ideation will grow weaker or level out altogether, when peer rejection is controlled for.

Materials and methods

Population

The Adolescent Mental Health Cohort and Replication Study is a mental health survey among pupils in their ninth year of comprehensive school (age 15–16 years). The person-identifiable survey was conducted in the academic years 2002–3, 2012–13 and 2018–19 in the city of Tampere, Finland. The present study is based on the cross-sectional survey of 2018–19. Parents were informed in advance about the forthcoming study by a message distributed through the digital application used in Finnish schools for communication between school and family. The adolescents responded to the online survey after being informed in writing and orally about the nature of the study and voluntariness of participation. They logged in to the survey using personal codes during a school lesson supervised by a teacher, who provided information on the study but did not intervene in the responding. After reading the written information the adolescents were asked to indicate their consent online. The study was duly approved by the ethics committee of Tampere University Hospital and given appropriate administrative permission by the appropriate authorities of the City of Tampere. In total 1,425 adolescents logged in to the survey. Of these, 39 (2.7%) declined to respond, leaving 1,386 participants, of whom 676 (48.8%) reported that their sex (as indicated in identity documents) was female and 710 (51.2%) male. The mean (SD) age of the participants was 15.59 (0.41) years, of whom 82.4% were living with both parents. Of these, 5.5%

reported that their father and 4.4% that their mother had only basic education, while 24.3% reported that at least one of their parents had been unemployed or laid off during the past 12 months.

Sex and gender identity

At the beginning of the survey the respondents reported their sex as stated in their identity documents, with response alternatives "boy" and "girl". It was explicitly mentioned that this question referred to sex as stated in official identity documents. According to reported sex, the respondents are referred to here as boys and girls, or as males and females. As under the law sex change is not available for minors under age 18 in Finland, this will serve to indicate the respondents' natal sex.

Later, in the section of the survey addressing health, respondents were asked about their perceived gender as follows: "Do you perceive yourself to be … ", with response options "a boy/a girl/both/none/my perception varies". According to sex and perceived gender, the respondents were categorized to one of three gender identities: cisgender identity (stated male sex and perceives himself as a boy; or female sex and perceives herself as a girl), opposite sex identification (male sex, perceives herself to be a girl; or female sex, perceives himself to be a boy), and other/non-binary gender identity (independent of sex: perceives him/herself to be both a boy and a girl, perceives him/herself to be neither a boy nor a girl, variable). Of the respondents, 96.9% reported cisgender identity, 0.2% opposite sex identification, and 2.9% other/non-binary gender identity. In the analyses, cisgender and transgender (=opposite sex identification or other/non-binary gender identity) were compared.

Suicidal ideation

Suicidal ideation was elicited as a question on a depression scale (see below): "Do you have thoughts of harming yourself?" with response alternatives "I don't have any thoughts of harming myself/I feel I would be better off dead/I have definite plans about committing suicide/I would kill myself if I had the chance". We classified the respondents as having severe suicidal ideation if they chose either of the last two alternatives. The first two options indicate no or passive suicidal ideation, which has been reported to be relatively common among young people [15] and these were thus not coded as suicidal ideation.

Gender minority specific risk factors for suicidality

Peer rejection and victimization have been suggested as a potential mechanism increasing suicidality among gender minority youth [7, 12, 13]. Regarding associations between transgender identity and suicidal ideation we therefore controlled for three variables related to peer rejection and victimization in our analyses: being repeatedly bullied, being repeatedly excluded out, and not having any close friends.

Being bullied was elicited using a question derived from a World Health Organization study on youth health [16]. Bullying was first defined as follows: "We say a pupil is being bullied when another pupil (or a group of pupils) says or does nasty things to him or her. It is also bullying when a pupil is repeatedly teased in a way she or he does not like. But it is not bullying when two pupils of about the same strength quarrel or fight". Respondents were then asked how frequently they had been bullied during the ongoing school term. Response options were: "many times a week", "about once a week", "2–3 times a month", "less frequently" and "not at all". Similarly, respondents were asked how often others had excluded the respondent and they had had to be alone, with the same response options. In the analyses these two questions were dichotomized to being repeatedly bullied and being repeatedly excluded, defined as being bullied/excluded 2–3 times a month or more often vs. less frequently or not at all. The respondents were further asked: "Do you have a close friend with whom you can discuss confidential matters?" with response options "no, none", "yes, one", "yes, two", "yes, several". In the analyses the responses were dichotomized to none/one or more.

Depression

Depression is a risk factor for suicidality [17, 18] as well as a correlate for peer victimization [19]. Depression was therefore controlled for in the present analyses. Depression was measured using a modified, 13-item version of the Beck Depression Inventory [20, 21] which had been validated in Finnish [22]. The Beck Depression Inventory has been shown to be a valid measure for detecting depression among adolescents [23]. It has good psychometric properties in Finnish adolescent population [24]. A sum score of the remaining 12 items (excluding suicidal ideation) was used in the analyses as a continuous variable.

Sociodemographic factors

Age was calculated from date of responding and date of birth and used as a continuous variable. Confounding by age needed to be controlled for because during adolescence, even small age differences may have an impact on all aspects of development [25, 26]. Similarly, confounding by sex is important because boys and girls develop at different rates during adolescence [27] and because subjection to aggressive behaviours is unevenly distributed across the sexes [28, 29]. Family socioeconomic variables used were mother's education (basic only vs. more than basic), father's education (basic only vs. more than basic) and parental unemployment (neither parent vs. one or both unemployed or laid off during the past 12 months). Socioeconomic variables were controlled for because they are associated with peer victimization [30] as well as with mental disorders [31, 32] and suicidality [33].

Honesty of responding

It has been demonstrated that some adolescents deliberately mispresent themselves in survey studies, exaggerating their belonging to minorities as well as their problem behaviours, symptoms and psychosocial problems [34–36]. Consequently, the proportion of those reportedly belonging to minorities (such as disabled adolescents, immigrants, sexual minorities) appears implausibly high and associations between minority status and psychosocial problems are overestimated. In relation to gender identity, such overestimation may risk a perception in society that gender variant youth are victims rather than active subjects participating in building the contemporary adolescent community. A sincerity screening question (such as: "have you responded honestly to this survey?") has been suggested as an appropriate method for controlling for such bias [35, 36]. Problems in sincerity of responding have been shown to be strongly associated with reporting transgender identity in adolescent survey studies [37, 38]. In the present study, a sincerity screening question was presented at the end of the survey as follows: "Have you responded in this survey as honestly as possible?", with response

alternatives "yes" and "no". In the analyses, the sincerity question was used to categorize study participants into those who answered yes (87.7%), those who answered no (2.8%) and those who omitted the sincerity question (9.5%).

Statistical analyses

We used logistic regression to study associations between transgender identity and severe suicidal ideation. Severe suicidal ideation was entered as the dependent variable. Gender identity (cisgender, transgender) was entered as the independent variable, using cisgender identity as the reference category. In the first model, age, sex and honesty of responding were controlled for. Next, mother's and father's education and parental unemployment were added. Next, depression was added, and finally peer rejection variables. Odds Ratios with 95% confidence intervals are reported.

Results

Of the total population, 27 (2.0%) respondents reported severe suicidal ideation. There was no statistically significant sex difference in the prevalence of suicidal ideation (natal females 2.3 %, natal males 1.7%, p=0.284). Among the 36 transgender identifying adolescents in our sample, 6 (14.3%) reported severe suicidal ideation. In a comparison of transgender and cisgender identifying adolescents, those with transgender identity reported severe suicidal ideation significantly more commonly than those with cisgender identity (14.3 vs. 1.6%, p<0.001).

In an effort to explore the relationship of transgender identity and severe suicidal ideation and whether a possible association persists after controlling for possible correlates/risk factors of suicidality, we created the four models presented in Table 1.

Model 1, adjusted for age, sex and honesty of responding, shows a significant association between transgender identity and severe suicidal ideation (OR [95% CI]=10.8 [4.0–28.9], p<0.001). Age, sex and honesty of responding were not statistically significantly associated with severe suicidal ideation (Table 1 Model 1).

In Model 2, socioeconomic factors were added and controlled for. The association between gender identity and severe suicidal ideation remained statistically

Table 1: Odds Ratios (OR, 95% CI) for severe suicidal ideation according to gender identity with cisgender gender identity as a reference group.

	Model 1 Age, sex, honesty of responding		**Model 2 Age, sex, honesty of responding, socio-demographic factors**		**Model 3 Age, sex, honesty of responding, socio-economic factors, depression**		**Model 4 Age, sex, honesty of responding, socio-economic factors, depression, peer rejection and victimization**	
	OR (95 % CI)	**p-Value**	**OR (95 % CI)**	**p-Value**	**OR (95 % CI)**	**p-Value**	**OR (95 % CI)**	**p-Value**
Gender identity								
Cisgender	Ref.		Ref.		Ref.		Ref.	
Transgender	**10.8 (4.0–28.9)**	**<0.001**	**9.9 (3.0–32.1)**	**< 0.001**	**6.3 (1.6–24.9)**	**0.009**	**5.3 (1.3–22.1)**	**0.02**
Age	1.5 (0.6–3.8)	0.4	1.1 (0.3–3.8)	0.8	1.6 (0.4–6.3)	0.5	1.4 (0.3–5.9)	0.7
Sex, natal								
Boy	Ref.		Ref.		Ref.		Ref.	
Girl	1.3 (0.6–2.8)	0.5	1.3 (0.5–3.1)	0.6	0.3 (0.1–1.0)	0.1	**3.3 (1.1–10.7)**	**0.04**
Honesty of responding								
Reported dishonesty	0.9 (0.1–7.4)	0.9	–	1.0	–	1.0	–	1.0
Skipped sincerity question	0.7 (0.2–3.2)	0.7	0.6 (0.08–4.4)	0.6	1.1 (0.1–9.1)	0.9	1.1 (0.1–9.4)	0.9
Sociodemographics								
Father's education			–	1.0	–	1.0	–	1.0
Mother's education			–	1.0	–	1.0	–	1.0
Parents' unemployment			1.5 (0.6–3.8)	0.4	1.2 (0.4–3.3)	0.8	1.1 (0.4–3.4)	0.8
Depression					**1.2 (1.2–1.3)**	**<0.001**	**1.2 (1.2–1.3)**	**<0.001**
Peer rejection and victimization								
Frequently bullied							0.7 (0.1–5.2)	0.8
Frequently left out							1.9 (0.5–7.3)	0.4
Not having a close friend							1.4 (0.3–5.6)	0.7

In Model 1, transgender identity was entered after controlling for sex, age and honesty of responding. In Model 2, socioeconomic factors are added and in Model 3 depression. Finally, Model 4 additionally includes peer rejection and victimization factors. Bold typeface indicates statistically significant values.

significant (OR [95% CI]=9.9 [3.0–32.1], p<0.001), while no statistically significant associations were detected between the other independent variables and severe suicidal ideation (Table 1 Model 2).

In Model 3, after accounting for depression, the association between transgender identity and severe suicidal ideation decreased but nevertheless persisted as statistically significant (OR [95 % CI]=6.3 [1.6–24.9], p=0.009). Model 3 also revealed a correlation between depression and severe suicidal ideation (p<0.001) (Table 1 Model 3).

In the full model (Table 1 Model 4), peer rejection and victimization factors were added. The association between transgender identity and severe suicidal ideation decreased further (OR [95 % CI]=5.3 [1.3–22.1], p=0.024) after controlling for the aforementioned factors but did not level out. Model 4 revealed no association between experiences of being bullied, being excluded, whether respondents had at least one close friend or not and severe suicidal ideation. As in Model 3, the association between depression and severe suicidal ideation persisted (p<0.001). Lastly in the full model, an association between female natal sex and severe suicidal ideation emerged (p=0.042).

Discussion

We investigated whether there is a relationship between transgender identity and severe suicidal ideation in general adolescent population, and if such possible association persists after controlling for the most prominent transgender related risk factors, namely peer rejection.

As expected, our results revealed a statistically significant correlation between transgender identity and severe suicidal ideation in our unselected general population sample of adolescents. This is in line with earlier studies, which – despite using slightly different methods – have reported an association between transgender identity and suicidality [5–9]. The association between transgender identity and suicidal ideation persisted after controlling for peer rejection, a factor commonly claimed to explain suicidality in transgender youth, and depression. Controlling for these confounders is a novel contribution, and our study also adds to the existing literature by demonstrating the association in a north European and very contemporary sample.

Transgender identity first yielded over ten-fold ORs for severe suicidal ideation in a model not accounting for confounding. This association weakened considerably when depression and peer rejection variables were added. Nevertheless, transgender identity is *per se* associated with increased severe suicidal ideation among adolescents in general population.

Prevalence of transgender identity may be on the increase among adolescents [37]. In the 21st century European and North American identity service clinics have seen an upsurge of adolescents with concerns over gender identity [39, 40]. Simultaneously, transgender identity is presented ominously in traditional media as well as on social media sites [41]. In addition, Finland is a pioneer country in gender equality [42] along with other Scandinavian countries [43]. It is feasible that transgender identity is slowly gaining a more normalized status in the eyes of the general public, thus decreasing the burden possibly created by non-mainstream gender identity. Yet the association between transgender identity and suicidality exists.

The GMSR model suggests identity nonaffirmation and concealment of one's experienced identity as stressors affecting mental health in gender minorities. Supporting the aforementioned idea, a study by Russell et al. [44] examined chosen name use as a proxy for gender affirmation (i.e. having one's identity affirmed by others through the use of one's chosen name rather than the name given at birth) and found that chosen name use was associated with lower suicidal ideation and behaviour. Use of preferred pronoun (she, he) serves the same function. Our data did not reveal whether the study participants actually lived according to their gender identity rather than natal sex thus making it impossible to study whether gender affirmation and/or concealment of one's gender identity affected suicidality in our sample. However, in Finnish language, one personal pronoun (*hän*) is used to refer to all genders and this might be expected to reduce feelings of non-affirmation in everyday verbal encounters.

Predictably, our data shows a statistically significant correlation between depression and severe suicidal ideation. Depression is considered an established risk factor for suicidality [17, 18]. Research also indicates that depression is far more common among transgender youth than cisgender youth [5], yet some studies on suicidality in transgender adolescents using general population samples failed to control for depression in their analyses [6, 8, 9]. Our results showed that depression alleviated, but did not level out, the significance of gender identity in relation to severe suicidal ideation.

In light of gender minority stress theory [4] and earlier research on the correlates of suicidality among transgender youth [7, 12, 13] we controlled for peer rejection in our study. Contrary to expectations, in addition to peer rejection variables not explaining the association between transgender ideation and suicidality, no statistically significant correlations were found between peer rejection and victimization factors measured in our questionnaire

and severe suicidal ideation. Transgender identity *per se* was a correlate of severe suicidal ideation even in the presence of peer rejection variables. Our results do not support a particular role of peer rejection in the association between transgender identity and suicidality.

Our results also indicated a statistically significant correlation between female natal sex and severe suicidal ideation. This finding corroborates previous research [45] and holds true even when gender identity is accounted for.

In summary, our study found that transgender gender identity was associated with severe suicidal ideation even after controlling for established covariates of suicidality, mainly sex, depression and peer rejection factors. In addition, severe suicidal ideation was associated with depression and female sex, as has previously been established. Peer rejection, the assumed main external factor in minority stress theory, does not suffice to explain excessive suicidality in transgender youth. Future research needs to focus on other aspects of minority stress theory to explain excessive suicidality in transgender youth, the role of internalized transphobia and other intrasubject phenomena.

Methodological considerations

Instead of a convenience sample, we used an unselected general population sample. Our study survey was conducted in a school setting, and in Finland the nine-year-long mandatory school covers over 99 % of children and adolescents of compulsory school age. We therefore feel our sample is adequately representative of Finnish youth. The Nordic countries have similar school systems. Additionally, research suggests that even between European countries peer relationships and psychological functioning of non-cisgender youth vary [46, 47]. Most studies on the subject of gender identity and suicidality have been conducted in the USA. We therefore believe our study in a north European setting is an important addition to the existing literature regarding the mental health of transgender adolescents in the important area of suicidality.

Depression is risk factor for suicidality [17, 18]. Certain external stressors, including gender-based rejection, have been suggested as gender minority-specific predictors of suicidality [4]. Controlling for peer rejection and depression in our analyses allowed us to scrutinize more minutely the relationship between gender identity and severe suicidal ideation. This is a strength of the present study.

To identify adolescents with transgender identity we used a two-step approach as recommended [8, 48], eliciting natal sex and gender identity with separate questions located apart from each other in our questionnaire.

As an additional measure to ensure the validity of our data, we added a sincerity screening question [36]. This is a strength, as gender identity as a topic is susceptible to facetious responding in survey studies [38].

The study has also several limitations. While our total sample was not small, the small number of non-cisgender identifying individuals in our study compelled us to aggregate all non-cisgender adolescents into one group ("transgender"), thereby prohibiting our ability to examine outcomes within a variety of gender identities under the transgender umbrella.

Suicidality was assessed with only one item on suicidal ideation taken from the BDI-13. Unfortunately, we had no data on suicide attempts.

Finally, due to our study being a cross-sectional one, one must exercise caution when interpreting the results as no true causalities can be established on the basis of such data.

Conclusion

Transgender identity is associated with severe suicidal ideation among adolescents in general population independently of depression and peer rejection. Earlier research has found other mental health disparities between cisgender and transgender youth. Suicide prevention and mental health promotion programmes should be targeted at gender minority youth even though they may not present with gender dysphoria. Future research needs to explore further possible explanations for the detected association.

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Transgender Identity Is Associated With Bullying Involvement Among Finnish Adolescents

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Background: During adolescence, bullying often has a sexual content. Involvement in bullying as a bully, victim or both has been associated with a range of negative health outcomes. Transgender youth appear to face elevated rates of bullying in comparison to their mainstream peers. However, the involvement of transgender youth as perpetrators of bullying remains unclear in the recent literature.

Objective: The aim of this study was to compare involvement in bullying between transgender and mainstream youth and among middle and late adolescents in a general population sample.

Methods: Our study included 139,829 students in total, divided between a comprehensive school and an upper secondary education sample. Associations between gender identity and involvement in bullying were first studied using cross-tabulations with chi-square statistics. Logistic regression was used to study multivariate associations. Gender identity was used as the independent variable, with cisgender as the reference category. Subjection to and perpetration of bullying were entered each in turn as the dependent variable. Demographic factors, family characteristics, internalizing symptoms, externalizing behaviors, and involvement in bullying in the other role were added as confounding factors. Odds ratios (OR) with 95% confidence intervals (95% CI) are given. The limit for statistical significance was set at $p < 0.001$.

Results: Both experiences of being bullied and perpetrating bullying were more commonly reported by transgender youth than by cisgender youth. Among transgender youth, all involvement in bullying was more commonly reported by non-binary youth than those identifying with the opposite sex. Logistic regression revealed that non-binary identity was most strongly associated with involvement in bullying, followed by opposite sex identity and cisgender identity. Transgender identities were also more strongly associated with perpetration of bullying than subjection to bullying.

Conclusion: Transgender identity, especially non-binary identity, is associated with both being bullied and perpetrating bullying even when a range of variables including internal stress and involvement in bullying in the opposite role are taken into account. This suggests that bullying during adolescence may serve as a mechanism of maintaining heteronormativity.

Keywords: transgender, minority, non-conforming, victimization, bullying

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INTRODUCTION

Gender identity refers to an individual's innate sense of being male, female or an alternative gender (Bockting, 1999). Distinct from gender identity, gender expression refers to an individual's various characteristics which, during a given period, are generally viewed as masculine or feminine (Coleman et al., 2012). While various gender identities exist, the vast majority of individuals present with cisgender identity, meaning that their gender identity is aligned with their birth-assigned sex. Gender minorities are individuals whose gender identity differs to various degrees from their birth-assigned sex. We refer to all gender minorities as transgender. This encompasses those who identify with the opposite sex and those whose gender identity aligns with both or neither sex or varies (non-binary or gender non-conforming gender identity).

Bullying is defined as aggressive behavior in which a pupil or group of pupils intentionally harm victims in various ways, usually over a period of time, and is usually characterized by a power imbalance between the victim and the bully or bullies (Olweus, 1993; King et al., 1996). Bullying may assume various forms, such as physical violence, verbal abuse, spreading rumors, exclusion from peer groups or then sexual gestures or remarks (Olweus, 2013). Cyberbullying extends the scope of bullying to various information technologies, such as social media and mobile phones (Lindfors et al., 2012). A considerable share of bullying among adolescents is of a sexual nature (Ashbaughm and Cornell, 2008) and often refers scornfully to homosexuality and gender-non-conforming self-expression (Toomey et al., 2012).

Adolescents' involvement in bullying is common (Kaltiala-Heino and Fröjd, 2011; Lessne et al., 2016), and whether this is as a victim or as a perpetrator, it has well documented negative associations with health and educational trajectories (Chan and Wong, 2015a). Being bullied has been associated, for example, with depression and suicidal ideation (Liang et al., 2007; Kaltiala-Heino and Fröjd, 2011; Heikkilä et al., 2013) and school truancy and impaired academic performance (Wormington et al., 2016). Being a bully has likewise been associated with depression (Klomek et al., 2008; Kaltiala-Heino et al., 2009; Kaltiala-Heino and Fröjd, 2011) and suicidal ideation (Kaltiala-Heino et al., 1999; Heikkilä et al., 2013), but also with delinquency and substance abuse (Liang et al., 2007).

An abundance of research suggests that sexual minority youth report being bullied 1.5–2 times more commonly than mainstream youth (Friedman et al., 2011; Abreu and Kenny, 2018; Kurki-Kangas et al., 2019; McKay et al., 2019). Recent research has also begun to unveil disparities in bullying involvement between gender minority and cisgender youth, particularly regarding disparities in being bullied. US-based research indicates that transgender youth, in school samples, are bullied more often than their cisgender peers (Day et al., 2018; Eisenberg et al., 2019; Johns et al., 2019; Bishop et al., 2020). Transgender youth have been reported to more commonly experience bullying related to gender or sexual orientation (Day et al., 2018) but also bullying related to weight and size (Bishop et al., 2020). In a clinical UK-based sample, almost 90% of transgender youth reported being bullied (Witcomb et al., 2019).

Both sexual minority and transgender youth may differ from the mainstream by gender expression not conforming to traditional male and female roles (i.e., for males by being feminine or for females by being masculine), which could render them susceptible to being bullied, a behavior commonly directed at peers perceived as different (Jones et al., 2018; Price-Feeney et al., 2018). When comparing birth-assigned males and females in a school sample, Lowry et al. (2020) found that youth who described their appearance as gender non-conforming (i.e., males believing they were perceived as feminine or females believing they were perceived as masculine) were violently victimized more often than those youth who described themselves as gender conforming and that the association was stronger among male students. van Beusekom et al. (2020) likewise found that gender non-conformity was associated with general victimization and homophobic name calling and that the associations were stronger among males. Further, among transgender youth, those who perceived themselves as gender non-conforming were bullied more frequently than those transgender youth who perceived themselves as gender conforming, and also within a transgender sample, the association between gender non-conformity and experiences of being bullied was particularly strong among birth-assigned boys (Gower et al., 2018). In summary, it seems that transgender youth as a whole are bullied more often than their cisgender peers and that among transgender populations bullying is more common among those who present as gender non-conforming.

The association between gender non-conformity and being bullied may originate from heterosexism, a phenomenon describing the effort to govern traditional masculine and feminine roles in society based on the assumption that heterosexuality is the superior sexual orientation and the norm (Chesir-Teran, 2003; Toomey et al., 2012). In the same vein, the stronger association of perceived gender non-conformity and being bullied among natal males could be explained by males' stronger tendency to safeguard traditional masculine roles (van Beusekom et al., 2020). Behavior deviating from culturally accepted masculine norms in boys is less readily tolerated than behavior deviating from the expected feminine behavior in girls (Ristori and Steensma, 2016). Even though the status of sexual and gender minorities has recently improved in many countries, heterosexism is widespread (Dunn and Szymanski, 2017), thus adolescents not conforming to gender norms may be more susceptible to bullying and harassment than their heterosexual gender-conforming peers.

However, confounding by internal stress needs to be considered when evaluating associations between transgender identity and being bullied. Gender minority stress and resilience (GMSR) theory (Hendricks and Testa, 2012; Testa et al., 2015) posits that gender minority people experience external stress, such as discrimination and victimization (such as being bullied), but also internal stress related to internalized transphobia and perceived stigma that predispose them to being constantly vigilant and anticipating discrimination. This may predispose to the development of depressive or hostile attribution bias (Morris, 2007; American Psychological Association, n.d.), possibly leading to the perception of victimization by peers

when none was actually intended. Internal stressors may also include concealment of one's identity. Although hiding one's identity may reduce direct targeting by bullies, it may in turn create stress through identity non-affirmation and expose to mental distress such as depression, known indeed to be associated with transgender identity (Kaltiala-Heino et al., 2018). Mental health problems may in turn further induce negative attribution bias and experiences of being bullied and ostracized (Kaltiala-Heino and Fröjd, 2011). Therefore, when studying associations between gender identity and being bullied, the role of mental distress needs to be accounted for in order to reveal possible independent associations between transgender identity and being bullied. The role that transgender identity *per se* has in being bullied is important for school policies to tackle bullying, and for health and social policies.

Further, being bullied is commonly associated with perpetrating bullying (Cook et al., 2010; Shetgiri et al., 2012; Chan and Wong, 2015b). Those victimized themselves may reactively bully others or perpetrating bullying may be a way of defending oneself. On the other hand, aggressors often socialize in antisocial groups where delinquency occurs, thus elevating the likelihood of being victimized themselves (Jennings et al., 2012). Perpetrating bullying may therefore arise from having been victimized or vice versa.

Thus, when studying the role of gender identity in being bullied among adolescents, perpetrating bullying needs to be controlled for. Additionally, possible participation as a bully is an important problem in itself. To the best of our knowledge, the research so far has not explored bullying perpetrated among gender minority youth (McKay et al., 2019). However, Dank et al. (2014) found that transgender youth reported some of the highest perpetration rates of sexual harassment perpetration. As bullying among adolescents often has a sexual and heterosexist nature (Ashbaughm and Cornell, 2008; Toomey et al., 2012), similar associations might be expected with bullying perpetration. Elevated rates of bullying perpetration have also been found among sexual minority populations in some studies (Berlan et al., 2010; Eisenberg et al., 2015), who appear similar to transgender youth when it comes to being bullied.

To summarize, it appears that transgender youth are victims of bullying more commonly than their cisgender peers, but research has not taken account of confounding by perpetrating bullying or mental health factors (Day et al., 2018; Gower et al., 2018; Eisenberg et al., 2019; Johns et al., 2019; McKay et al., 2019; Bishop et al., 2020; Lowry et al., 2020; van Beusekom et al., 2020). The possible associations between transgender identity and perpetrating bullying are not known, leaving the understanding of the associations between gender identity and this common problem incomplete. According to the research so far, it moreover remains unclear whether involvement in bullying is similar across various gender minority identities or if opposite sex and non-binary identities differ in this respect. Additionally, most of the literature on transgender youth and bullying originates from North America, a possibly culturally different setting from Northern Europe. In this context, we ask and aim to answer the following questions:

(1) Is transgender identity associated with being bullied even when known correlates of involvement in bullying are controlled for?
(2) Is transgender identity associated with perpetrating bullying even when known correlates of involvement in bullying are controlled for?
(3) Are the possible associations similar between opposite sex identifying and non-binary youth?

During adolescence, small differences in age may have a large impact on development (Laursen and Hartl, 2013; Dahl et al., 2018). Involvement in bullying decreases as adolescents grow older (Boulton and Underwood, 1992; Liang et al., 2007), and with maturation of sexuality (Cacciatore et al., 2019) and identity development (Kroger et al., 2010), both older transgender youth and their mainstream peers are likely more confident and more able to handle diversity, which will likely also reduce involvement in bullying among transgender youth. Thus, we finally ask:

(4) Are these associations similar among middle and late adolescents?

We first expect to see that transgender adolescents report being bullied in excess in comparison to their cisgender peers, but that the associations will grow weaker when confounding by mental health correlates of bullying involvement and being a bully perpetrator are controlled for. Second, we hypothesize that transgender youth will also report more perpetration of bullying than their cisgender peers. Third, in line with heteronormative social control, we expect to see that the associations between gender identity and being bullied will be the strongest among non-binary/gender non-conforming youth. And finally, we expect to find that the associations between transgender identity and involvement in bullying will be weaker among older adolescents.

MATERIALS AND METHODS

The School Health Promotion Study

The School Health Promotion Study (SHPS) of the National Institute for Health and Welfare is a school-based cross-sectional anonymous survey designed to examine the health, health behaviors, and school experiences of teenagers. The survey questionnaire is sent to every municipality in Finland. The municipalities decide if the schools in their area will participate in the survey and the vast majority of schools do indeed participate. The survey is run primarily for health policy and administrative purposes, and the data is available on request for purposes of scientific research. The main aim of the survey is to produce national adolescent health indicators that municipalities can utilize in planning services and that can be used at national level to assess the effectiveness of health policies. The authors obtained permission to use the data for scientific research but were not responsible for collecting it. The School Health Promotion Study has received ethical approval from Tampere University Hospital ethics committee and the ethics committee of the National Health Institute.

The survey is conducted among 8th and 9th graders of comprehensive school and second-year students in upper secondary education (upper secondary school and vocational school) which follow completion of the 9 years of comprehensive school. Survey participants in 2017 numbered 139,829. Of these, 48.9% (68,333) reported that they were male and 50.4% (70,539) that they were female. Of all respondents, 0.7% (957) did not report their sex, and these were excluded from further analyses. Of the respondents, 52.7% were in comprehensive school grades 8 or 9, 25.0% were attending upper secondary school, and 23.3% vocational school. The age of respondents in the comprehensive school sample was [mean (SD)] 14.83 (0.82) years, those in upper secondary school 16.84 (0.83) years and those in vocational school 17.29 (2.43) years. Of the respondents, 3.5% (n = 4,940) reported that they were 21 years old or older. These were excluded from further analyses. Descriptive information of the sample is given in **Table 1**. See section "Implausible, Likely Facetious Responding" for final sample size.

Measures

Sex and Gender Identity

The respondents were first asked "What is your sex?" with response alternatives "boy" and "girl" in the comprehensive school survey, and "male"/"female" in the upper secondary education response forms. This was intended to elicit the respondent's sex as noted in their identity documents and was the opening question of the whole survey. Later, in the section of the survey addressing health, respondents were asked about their perceived gender as follows: "Do you perceive yourself to be. . .," with response options "a boy/a girl/both/none/my perception varies." According to sex and perceived gender, the respondents were categorized into one of three gender identities: cisgender identity (indicated male sex and perceives himself as a boy, or female sex and perceives herself as a girl), opposite sex identification (male sex, perceives herself as a girl; or female sex, perceives himself as a boy), and other/non-binary gender identity (independent of sex: perceived to be both a boy and a girl, perceived to be neither a boy nor a girl, variable).

Bullying

Bullying or being bullied was elicited using two questions derived from a World Health Organization study on youth health (King et al., 1996). The questions are based on Olweus' definition of bullying (Olweus, 1993) that have been widely accepted as a basis for bullying research. Bullying was first defined as follows: "We say a student is being bullied when another student (or group of students), say or do nasty things to him or her. It is also bullying when a student is being teased repeatedly in a way she or he does not like. But it is not bullying when two students of about the same strength quarrel or fight." Respondents were then asked how frequently they had been bullied during the ongoing school term, and how frequently they had bullied others: many times a week, about once a week, less frequently, and not at all. In the analyses, responses to these questions were dichotomized to about once a week or many times a week (= frequently) vs. less frequently or not at all.

Internalizing and Externalizing Symptoms

Internalizing symptoms studied were depression and generalized anxiety. Depression was measured with two screening questions: "During the past month, have you often been bothered by feeling down, depressed, or hopeless?" (yes/no) and "During the past month, have you often been bothered by little interest or pleasure in doing things?" (yes/no). These two questions have shown good psychometric properties in detecting depression in adolescents (Richardson et al., 2010). In the analyses, a sum score of these items was used as continuous variable. Generalized anxiety symptoms were elicited by the GAD-7, a self-report

TABLE 1 | Descriptive statistics.

	Comprehensive education		Upper secondary education	
Demographic variables	**N (%)**	**M (SD)**	**N (%)**	**M (SD)**
Sex				
Girl	36 123 (51.3%)		30 453 (50.8%)	
Boy	34 276 (48.7%)		29 520 (49.2%)	
Age		14.83 (0.82)		17.94 (2.17)
Mother's education				
Only basic	3 815 (6.0%)		2 938 (5.2%)	
Other	59 705 (94.0%)		53 580 (94. 8%)	
Father's education				
Only basic	5 520 (8.9%)		5 191 (9.4%)	
Other	56 813 (91.1%)		50 315 (90.6%)	
Family structure				
Nuclear family	47 039 (69.5%)		38 699 (65.9%)	
Other	20 682 (30.5%)		20 053 (34.1%)	
At least one parent unemployed in past 12 months				
Yes	20 736 (31.0%)		18 384 (31.5%)	
No	46 229 (69.0%)		39 972 (68.5%)	
Difficulties to communicate with parents				
Yes	4 902 (7.3%)		3 713 (6.4%)	
No	61 946 (92.7%)		54 671 (93.6%)	
Drinking alcohol weekly				
Yes	2 790 (4.1%)		5 847 (9.9%)	
No	65 843 (95.9%)		53 349 (90.1%)	
Depression*		3.0 (1.5)		3.0 (1.5)
GAD-7**		3.8 (4.7)		3.9 (4.6)
Gender identity				
Cisgender	66 687 (95.7%)		57 540 (96.5%)	
Opposite sex	504 (0.7%)		313 (0.5%)	
Non-binary gender	2 483 (3.6%)		1 792 (3.0%)	
Bullied someone				
Yes	1 717 (2.5%)		750 (1.3%)	
No	68 125 (97.5%)		58 884 (98.7%)	
Been bullied				
Yes	3 438 (4.9%)		1 093 (1.8%)	
No	66 631 (95.1%)		58 789 (98.2%)	

*Range of depression was 2–8. **Range of GAD-7 was 0–21. The GAD-7 items describe the most prominent diagnostic features of the DSM IV generalized anxiety disorder.*

questionnaire designed to identify probable cases of generalized anxiety disorder and to assess symptom severity. The GAD-7 items describe the most prominent diagnostic features of the DSM IV generalized anxiety disorder. The GAD-7 elicits how often, during the last 2 weeks, the respondent has been bothered by each of the seven core symptoms of generalized anxiety disorder. Response options are "not at all," "for several days," "for more than half the days," and "nearly every day," scored, respectively as 1, 2, 3, and 4. The GAD-7 has been shown to be a reliable and valid measure for detecting generalized anxiety disorder in primary care and general population (Tiirikainen et al., 2019). In the analyses the sum score of these seven items was used as continuous variable.

Externalizing behaviors were represented, in addition to perpetrating bullying, by frequent consumption of alcohol. Alcohol consumption was elicited as follows: "How often do you use even small amounts of alcohol, for example half a can of beer or more?" with response options "once a week or more often/once or twice a month/about once a month/less frequently/not at all." In the analyses the responses were dichotomized to once a week or more often (= frequently) vs. all other alternatives.

Family Variables

Family variables used were mother's and father's education (basic education, i.e., comprehensive school) only vs. at least upper secondary education, family structure [living with both parents (= nuclear family) vs. any other family constellation], parental unemployment (none vs. one vs. both parents unemployed or laid off during past 12 months) and difficulties in parent-adolescent communication (never able to discuss important things with parents vs. can talk with parents at least sometimes). Family variables were controlled for because they have a strong association with involvement in bullying (Knaappila et al., 2018).

Implausible, Likely Facetious Responding

It has been demonstrated that some adolescents deliberately mispresent themselves in survey studies, exaggerating their belonging to minorities as well as their problem behaviors, symptoms, and psychosocial problems (Cornell et al., 2012; Robinson-Cimpian, 2014). Due to this, the proportion of those reporting belonging to minorities appears implausibly high, and associations between minority status and psychosocial problems are overestimated. In relation to gender identity, such overestimation may risk a perception in society that gender variant youth are victims rather than active subjects participating in building the contemporary adolescent community. Particularly in light of the excessive media coverage of gender identity issues (Marchiano, 2017), gender identity is likely to be a topic which tempts adolescents to give facetious responses.

Excluding respondents reporting unlikely combinations of extreme responses outside the focus of present interest on topics theoretically not related to the variables of interest for the actual study questions has been shown to be an appropriate method for controlling for such facetious responding (Robinson-Cimpian, 2014; Kaltiala-Heino and Lindberg, 2019). In line with this, respondents reporting implausibly young age for being enrolled in the grades studied (<13 years), implausible shortness or height (extreme outliers) or who were calculated to have extreme BMI (< 10 or > 40) or reporting both extremely poor hearing, sight and mobility were classified as mischievous responders (for a detailed description, see Kaltiala-Heino and Lindberg, 2019). Being classified as a mischievous respondent was strongly associated with reporting transgender identity in this data (Kaltiala-Heino and Lindberg, 2019). These respondents (2.7%) were excluded from further analyses. Thus, the data in the analysis was from 130,372 respondents, of whom 96.1% were classified with cisgender identity, 0.6% with opposite sex identification, and 3.3% with other/non-binary gender identity. Descriptive statistics of the variables are presented in **Table 1**.

Statistical Analyses

Associations between gender identity and involvement in bullying were first studied using cross-tabulations with chi-square statistics. Logistic regression was used to study multivariate associations. Gender identity was used as the independent variable, with cisgender as the reference category. (1) being bullied and (2) bullying others were entered each in turn as the dependent variable. As covariates, in the first model age and sex were added, in the second model family characteristics were added and finally, in the third model, internalizing symptoms, externalizing behaviors, and involvement in bullying in the other role (as a bully when being bullied was studied, and vice versa) were added. Odds ratios (OR) with 95% confidence intervals (95% CI) are given. Due to the large size of the data we set the limit for statistical significance at $p < 0.001$. The analyses were run separately for the comprehensive school and upper secondary education groups.

RESULTS

Prevalence of Involvement in Bullying

Overall, reported prevalence of experiences of being bullied was higher in the comprehensive school sample than in the upper secondary education sample (4.9% vs. 1.8%). Similarly, reported prevalence of bullying others was higher in the comprehensive school sample (2.5% vs. 1.3%) (**Table 1**).

Experiences of being bullied were most commonly reported by non-binary students, followed by opposite sex identifying and cisgender students in both samples (**Table 2**).

TABLE 2 | Experiences of bullying and bullying others according to gender identity,% (n).

	Cisgender	Opposite sex	Non-binary gender	*p*
Comprehensive education				
Been bullied	4.3 (2 886)	12.8 (64)	16.5 (404)	<0.001
Bullied others	2.0 (1 356)	8.9 (44)	10.5 (256)	<0.001
Upper secondary education				
Been bullied	1.6 (899)	5.8 (18)	8.5 (152)	<0.001
Bullied others	1.0 (582)	4.9 (15)	7.9 (140)	<0.001

Prevalence of perpetrating bullying followed a similar pattern. Bullying others was most commonly reported by non-binary students, followed in both samples by opposite sex identifying and cisgender students (**Table 2**).

Relationship Between Gender Identity and Being Bullied

Table 3 presents the associations between gender identity and being bullied in the comprehensive school and upper secondary education samples before and after controlling for relevant confounding. Among the comprehensive school sample, opposite sex identification first yielded over twofold odds while non-binary identity yielded over fourfold odds for being bullied (**Table 3**; Model 1[a]*). In the upper secondary education sample, a similar pattern emerged but with even stronger associations (**Table 3**; Model 1[b]**).

In each model presented in **Table 3**, more covariates were added and controlled for. The associations between opposite sex identification and non-binary identity with being bullied grew stronger when age and sex were added into the model but diminished when confounding by family variables, alcohol consumption, and finally mental health variables and perpetrating bullying were controlled for. Nevertheless, in the final model (**Table 3**; Model 3[a]), after controlling for the aforementioned covariates, a statistically significant association between non-binary identity and being bullied persisted among the comprehensive school sample [OR (95% CI) = 1.98 (1.69–2.32), p = 0.000]. Among the upper secondary education sample, the association likewise only persisted among non-binary youth [OR (95% CI) = 1.99 (1.50–2.62), p = 0.000] (**Table 3**; Model 3[b]).

Notably, the final models also revealed a strong correlation between being bullied and bullying others, particularly in the upper secondary education sample (comprehensive education sample, [OR (95% CI) = 9.20 (7.96–10.64), p = 0.000]; upper secondary education sample, [OR (95% CI) = 46.97 (37.84-58.31), p = 0.000] (**Table 3**; Models 3[a] and 3[b]).

Other Correlates of Being Subjected to Bullying

In addition to perpetrating bullying, certain family variables, depression, and anxiety were positively associated with being bullied among both samples. In both samples, a negative association emerged between natal female sex and being bullied (**Table 3**; Models 3[a] and 3[b]).

The Relationship Between Gender Identity and Perpetrating Bullying

Table 4 presents the association between gender identity and perpetrating bullying among the comprehensive school and upper secondary education samples before and after controlling for confounding. Throughout our models, the associations between gender minority identities and perpetrating bullying were stronger than the associations between gender minority identities and being bullied.

Initially in the comprehensive school sample, all transgender youth had over fourfold odds for perpetrating bullying (**Table 4**; Model 1[a]*). In comparison to the comprehensive school sample, the odds for perpetrating bullying were lower for the opposite sex identifying and higher for the non-binary identifying youth in the upper secondary education sample (**Table 4**; Model 1[b]*).

TABLE 3 | Regression analysis of being bullied.

	Comprehensive education			Upper secondary education		
	Model 1[a]*	Model 2[a]	Model 3[a]	Model 1[b]**	Model 2[b]	Model 3[b]
	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)
Gender ID (ref. cisgender)						
Opposite sex	**2.86 (2.02–4.04)**	**2.67 (1.89–3.82)**	1.66 (1.13–2.49)	**3.77 (2.10–6.78)**	**3.29 (1.82–5.94)**	2.13 (1.01–4.17)
Non-binary	**4.22 (3.67–4.86)**	**3.52 (3.04–4.06)**	**1.98 (1.69–2.32)**	**5.21 (4.14–6.55)**	**4.35 (3.44–5.49)**	**1.99 (1.50–2.62)**
Official gender female (ref. male)	**0.76 (0.72–0.85)**	**0.73 (0.68–0.80)**	**0.54 (0.50–0.60)**	**0.64 (0.55–0.74)**	**0.60 (0.52–0.69)**	**0.64 (0.54–0.75)**
Age	0.96 (0.90–1–03)	0.94 (0.88–1.01)	0.83 (0.78–0.91)	1.04 (0.95–1.13)	0.99 (0.90–1.08)	0.94 (0.85–1.03)
Mother only basic education (ref. other)		**1.22 (1.03.1.45)**	1.17 (0.97–1.40)		**1.82 (1.42–2.36)**	**1.58 (1.18–2.10)**
Father only basic education (ref. other)		1.10 (0.95-1.28)	1.01 (0.87-1.19)		**1.26 (1.00-1.58)**	1.18 (0.92-1.50)
Nuclear family (ref. no)		1.09 (0.99–1.19)	0.97 (0.88–1.06)		**1.19 (1.03–1.39)**	1.11 (0.95–1.30)
Parental unemployment (ref. no)		**1.36 (1.25–1.49)**	**1.22 (1.13–1.33)**		**1.35 (1.17–1.57)**	1.25 (1.07–1.47)
Communication difficulties with parents (ref. no)		**2.51 (2.24–2.82)**	**1.31 (1.15–1.49)**		**2.45 (2.01–3.02)**	1.37 (1.09–1.74)
Alcohol weekly (ref. no)			1.30 (1.10–1.55)			1.30 (1.05–1.60)
Depression (continuous)			**1.18 (1.14–1.23)**			**1.16 (1.08–1.24)**
GAD-7 (continuous)***			**1.08 (1.06–1.09)**			**1.07 (1.04–1.09)**
Bullied others at least once a week (ref. no)			**9.20 (7.96–10.64)**			**46.97 (37.84–58.31)**

*Statistically significant values ($p < 0.001$) presented in bold face. *Estimates in unadjusted model: Opposite sex OR (95% CI) = 2.73 (CI 1.93–3.86), non-binary OR (95% CI) = 4.09 (3.55–4.70). **Estimates in unadjusted model: Opposite sex OR (95% CI) = 3.51 (1.96–6.30), non-binary OR (95% CI) = 5.01 (4.02–6.34). ***Range of GAD-7 was 0–21. The GAD-7 items describe the most prominent diagnostic features of the DSM IV generalized anxiety disorder.*

TABLE 4 | Regression analysis for perpetration of bullying.

	Comprehensive education			Upper secondary education		
	Model 1[a]*	Model 2[a]	Model 3[a]	Model 1[b]**	Model 2[b]	Model 3[b]
	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)
Gender ID (ref. cisgender)						
Opposite sex	**6.13 (4.09–9.19)**	**5.56 (3.69–8.39)**	**3.91 (2.47–6.19)**	**5.62 (2.85–11.12)**	**5.03 (2.54–9.99)**	3.15 (1.38–7.19)
Non-binary	**6.00 (4.98–7.24)**	**4.83 (3.98–5.86)**	**2.58 (2.07–3.21)**	**8.61 (6.71–11.05)**	**7.24 (5.60–9.35)**	**4.01 (2.91–5.52)**
Official gender female (ref. male)	**0.28 (0.25–0.32)**	**0.26 (0.23–0.30)**	**0.25 (0.21–0.29)**	**0.18 (0.14–0.23)**	**0.17 (0.13–0.21)**	**0.19 (0.15–0.25)**
Age	**1.13 (1.03–1.24)**	**1.09 (1.00–1.20)**	1.04 (0.94–1.15)	1.07 (0.96–1.20)	1.02 (0.90–1.14)	0.96 (0.84–1.08)
Mother only basic education (ref. other)		1.36 (1.07–1.72)	1.24 (0.96–1.59)		**2.01 (1.45–2.78)**	**1.51 (1.01–2.21)**
Father only basic education (ref. other)		1.20 (1.06–1.36)	1.29 (1.03–1.60)		1.12 (0.84–1.50)	0.96 (0.69–1.34)
Nuclear family (ref. no)		1.21 (1.06–1.38)	1.12 (0.98–1.28)		1.13 (0.94–1.37	1.05 (0.85–1.29)
Parental unemployment (ref. no)		1.21 (1.06–1.37)	1.08 (0.94–1.23)		1.17 (0.98–1.41)	1.03 (0.84–1.27)
Communication difficulties with parents (ref. no)		**2.71 (2.28–3.21)**	**1.59 (1.31–1.92)**		**2.62 (2.03–3.38)**	**1.83 (1.35–2.49)**
Alcohol weekly (ref. no)			**3.99 (3.34–4.77)**			**2.85 (2.28–3.56)**
Depression (continuous)			1.02 (0.95–1.08)			0.96 (0.87–1.06)
GAD-7 (continuous)***			**1.04 (1.02–1.06)**			1.03 (0.99–1.06)
Been bullied at least once a week (ref. no)			**8.90 (7.68–10.30)**			**45.68 (36.73–56.82)**

*Bold face indicates statistically significant values ($p < 0.001$). *Estimates in unadjusted model: Opposite sex OR (95% CI) = 4.77 (3.21–7.10), non-binary OR (95% CI) = 5.10 (4.2–6.13). **Estimates in unadjusted model: Opposite sex OR (95% CI) = 4.31 (2.20–8.44), non-binary OR (95% CI) = 7.57 (5.93–9.66). ***Range of GAD-7 was 0–21. The GAD-7 items describe the most prominent diagnostic features of the DSM IV generalized anxiety disorder.*

The associations between opposite sex identification and non-binary identity with perpetrating bullying grew stronger when age and sex were added into the model but diminished when confounding by family variables, alcohol consumption, and finally mental health variables and perpetrating bullying were controlled for.

In the comprehensive school sample, the association between gender identity and perpetrating bullying nevertheless persisted as statistically significant among both opposite sex identifying [OR (95% CI) = 3.91 (2.47–6.19), $p = 0.000$] and non-binary youth [OR (95% CI) = 2.58 (2.07–3.21), $p = 0.000$] although the association was stronger among opposite sex identifying youth (**Table 4**; Model 3[a]). In the upper secondary education sample, the association persisted statistically significant only among non-binary youth [OR (95% CI) = 4.01 (2.91–5.52), $p = 0.000$] (**Table 4**; Model 3[b]).

Notably, the final models also revealed a strong association in both samples between being bullied and bullying others [comprehensive education sample, OR (95% CI) = 8.90 (7.68–10.30), $p = 0.000$; upper secondary education sample, OR (95% CI) = 45.68 (36.73–56.82), $p = 0.000$]. The association was stronger among the upper secondary education sample (**Table 4**; Models 3[a] and 3[b]).

Other Correlates of Perpetrating Bullying

Positive associations between perpetrating bullying and difficulties communicating with parents and weekly alcohol consumption were found in both samples. In the comprehensive school sample, anxiety (but not depression) was also positively associated with perpetrating bullying. In both samples, a negative association between natal female sex and perpetrating bullying was found (**Table 4**; Models 3[a] and 3[b]).

DISCUSSION

In this study we analyzed the association of gender minority identity with involvement in bullying among a large population-based sample of adolescents. We analyzed whether the association of gender identity and involvement in bullying differed among opposite sex and non-binary identifying youth or among middle and late adolescents.

We firstly found that in our large, nationally representative sample, being bullied was generally associated with transgender identity, and with non-binary identity in particular. This finding is in line with the existing literature, which indicates that experiences of being bullied are more common among gender minority than mainstream youth (Day et al., 2018; Eisenberg et al., 2019; Johns et al., 2019; Bishop et al., 2020). Various factors could explain this disparity. Transgender youth may differ from their peers in that their behavior or appearance deviates from traditional feminine and masculine roles. This could partly explain elevated rates of being bullied as bullying is often targeted at those perceived to deviate from the mainstream (Jones et al., 2018; Price-Feeney et al., 2018). More specifically, relating to sexual orientation and gender identity, bullying sexual and gender minorities could also stem from heterosexism, which refers to efforts to maintain traditional masculine and feminine roles in society (Chesir-Teran, 2003; Toomey et al., 2012). On the other hand, internal stress, as described in gender minority stress and resilience theory (Hendricks and Testa, 2012; Testa et al., 2015), could result in constant vigilance and anticipation of being victimized through the development of hostile or depressive attribution bias thus predisposing transgender youth to detect victimization by their peers where none was actually intended.

Secondly, we found that transgender identity was generally associated with perpetrating bullying and that the association was stronger than that of transgender identity and being bullied. To the best of our knowledge, past research has not examined perpetration of bullying among gender minority youth, thus rendering comparisons to prior research impossible. In a study by Dank et al. (2014), however, it was reported that the few transgender young people in their study were the ones most likely to perpetrate dating violence among their sample.

Such aggressive behavior could arise from being victimized or having witnessed victimization of other gender or sexual minorities (Eisenberg et al., 2016), as a coping mechanism or avenue through which one could release negative feelings.

On the other hand, adolescence in general is a mentally challenging time (Paus et al., 2008) during which adolescents struggle with a series of developmental tasks such as forming peer relations and coming to grips with their sexuality (Havighurst, 1948; Seiffge-Krenke and Gelhaar, 2008). The added complexity due to the emergence and further development of transgender identity could cause extra stress for adolescents. In this context, perpetrating bullying could be seen as sign of acting out, perhaps due to transgender adolescents' own unresolved developmental issues.

Thirdly, non-binary identity was more strongly associated with involvement in bullying than opposite sex identity. Past research has found elevated rates of being subjected to bullying among youth (Lowry et al., 2020; van Beusekom et al., 2020) and transgender youth (Gower et al., 2018) who perceive themselves as more gender non-conforming (i.e., masculine females or feminine males) than youth with no such perception. Non-binary identifying youth particularly may display gender expression that does not conform to either masculine or feminine roles, and this may make them vulnerable to being bullied either due to simply being different from the mainstream, or as a result of heterosexist control. We found, however, that not only being bullied but also engaging in bullying was even more common among non-binary (perception of gender conforms to both or neither sex or it varies) than among opposite sex identifying youth.

It may be that the process of gender identity formation is a more complex process among non-binary youth than those young people identifying with the opposite sex. Such differences could stem from the nature of non-binary identity itself, as perceived gender may fluctuate, or align with both or neither traditional gender roles. This could delay the achievement of so-called transgender identity milestones, or factors associated with the formation of transgender identity, such as first living in the gender role felt within (Wilkinson et al., 2018) as young people struggle with their still unresolved gender identity. This internal turmoil due to uncertainty about one's own identity, could, for example, impede the formation of peer relationships, a key part of adolescent development (Laursen and Hartl, 2013). This could exacerbate internal stress and predispose non-binary youth to mental health symptoms such as depression, which are known to relate to involvement in bullying (Kaltiala-Heino and Fröjd, 2011).

Finally, regarding age differences, the existing literature shows that as adolescents mature and progress toward adulthood, involvement in bullying decreases (Boulton and Underwood, 1992; Liang et al., 2007; Coulter et al., 2018). In line with this, involvement in bullying in our data was reported less commonly by the older adolescents in the upper secondary education sample across all gender identities. The association between opposite sex identification and being bullied also leveled out when confounding was controlled for in both samples. However, regardless of lower reported prevalence, the association between non-binary identity and perpetration of bullying was stronger among the older than among the younger adolescents in our study. It might be that those adolescents who still remain involved in bullying at an older age represent adolescents with the most developmental challenges. This finding could be seen to lend support to the notion that among transgender youth the possibly more complex nature of non-binary identity (in comparison to opposite sex identifying or cisgender youth) is indeed related to additional developmental challenges.

Additionally, while involvement in bullying was less prevalent among the older students of our study, the correlation between being bullied and being a bully grew stronger. This is likewise in agreement with the assumption that when involvement in bullying becomes less common as age increases, those who remain involved likely represent adolescents with the most developmental challenges. Being both a bully and a victim (bully-victim) is known to correlate with greatest amount of mental health problems and developmental difficulties (Forero et al., 1999).

Strengths and Weaknesses of the Present Study

Our study has several strengths. Our large sample was an unselected, population-based sample representative of Finnish middle and late adolescents. This enhances the generalizability of our results.

There are indications even between European countries of variation in transgender youth's peer relationships and psychological functioning (de Graaf et al., 2018; van der Star et al., 2018). One could speculate that such differences are even greater between European and North American adolescents. As most research on gender identity and involvement in bullying originates in the United States, we feel our study in a Northern European setting is a useful addition to the existing literature on the important subject of involvement in bullying and transgender identity.

We controlled in our analyses for a wide range of confounding factors closely related to involvement in bullying and gender minority identity. This allowed us to examine more closely the relationship between transgender identity and involvement in bullying. This is a strength of our study.

As has been recommended (Reisner et al., 2014; Eisenberg et al., 2017), we identified transgender youth with two separate questions located far apart from each other in the study questionnaire ("two-step method"). Due to the large sample size, we were additionally able to separate opposite sex identifying youth from non-binary youth, rather than grouping all transgender youth as one in our analyses.

Involvement in bullying was elicited using questions derived from WHO's Youth Study (King et al., 1996). The WHO questions have since then been used in numerous studies across countries (for review see Kaltiala-Heino and Fröjd, 2011) which makes data elicited with them comparable with earlier research. This is a strength of our study.

Our study also has several weaknesses. In spite of our large sample, the number of transgender youth reporting perpetrating bullying was on the smaller side, although we still feel we reached adequate cell sizes for statistical validity.

In the present study, a secondary data was used. The data was not planned nor collected by us, and we were therefore unable to influence the way certain topics of interest were elicited. As a result, the way experiences of bullying were elicited in the study questionnaire made it impossible to distinguish between different types of bullying behavior in which adolescents had been involved, such as traditional school bullying or cyberbullying, or physical and verbal bullying and exclusion.

Additionally, whether respondents were living in their desired gender roles was not elicited in the questionnaire. This inhibited additional comparisons regarding involvement in bullying among those who conceal their gender identity vs. those who do not. The GMSR theory suggests concealment of one's experienced gender identity (for example not living in the desired gender role) is a stressor that could possibly negatively affect mental health of gender minority people. One could thus speculate that living in the desired gender role could in fact reduce mental health symptoms such as depression, thus decreasing bullying involvement, a behavior associated with mental health issues. On the other hand, living in the desired gender role could manifest as behavior or appearance deviating from traditional masculine and feminine roles (such as natal girls using boys' restrooms or natal boys having a more feminine appearance) thus predisposing youths to bullying, a behavior commonly directed to those who deviate from the mainstream. Lastly, as the study was a cross-sectional one, caution must be exercised when interpreting the results as causality cannot be determined from such data.

CONCLUSION

Transgender identity and non-binary identity in particular, is associated with both being bullied and bullying others even when a range of variables, including internal stress and involvement in bullying in the opposite role, are taken into account. This could suggest that the development of transgender identity (and non-binary identity in particular) is an additional stress for youth as they navigate the already developmentally challenging years of adolescence toward adulthood.

Future studies should focus on including gender minority specific measures in study questionnaires. Such measures could include various gender identities and for example gender minority specific stressors named in the GMSR theory, such as living in the desired role. Such measures could help uncover in more detail the association between bullying involvement and various gender identities *per se*.

Programs that promote gender diversity should be implemented in schools and in larger context in the society with the aim of reducing heteronormativity and promoting the acceptance of gender diversity.

Teachers, parents and health care workers must consider that gender minority youth are not necessarily only victims but also perpetrators of bullying.

DATA AVAILABILITY STATEMENT

The data analyzed in this study is subject to the following licenses/restrictions: The data belongs to the Finnish Institute for Health and Welfare and is available for researchers by application. Requests to access these datasets should be directed to pauliina.luopa@thl.fi.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by the Tampere University Hospital ethics committee (Tampere University Hospital, Tampere, Finland) and National Institute of Health and Welfare ethics committee (National Institute of Health and Welfare, Helsinki, Finland). Written informed consent from the participants' legal guardian/next of kin was not required to participate in this study in accordance with the national legislation and the institutional requirements.

AUTHOR CONTRIBUTIONS

RK conceived the idea of the study and supervised the project. NE and RK designed the statistical analyses while NE carried them out. EH wrote the manuscript with help from RK and NE. All authors contributed to the final manuscript, each with a specific focus.

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Research Article **Open Access**

Normative and negative sexual experiences of transgender identifying adolescents in the community

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Abstract

Background: Sexuality is a major facet of development during adolescence. Apace with normal sexual development, sexual experiences become more common and intimate. Recent research reports mixed results as to whether this is the case among transgender identifying adolescents. Recent research also suggests that trans youth experience negative sexual experiences (such as dating violence and sexual harassment) more often than their cisgender identifying peers. However, most studies have had clinical or selected samples.
Objective: The aim of this study is to compare the normative as well as negative sexual experiences of trans youth with their cisgender peers in the general population.
Method: Our study included 1386 pupils of the ninth year of comprehensive school in Finland, mean age (SD) 15.59 (0.41) years. We compared sexual experiences, sexual harassment and dating violence among trans youth and their cisgender identifying peers. Distributions of the outcome variables were calculated among the whole sample and by sex. Next, multivariate associations were studied using logistic regression adjusting for age, sex, honesty of responding and depression. Odds Ratios (OR) with 95% confidence intervals (CI) are given.
Results: After adjusting for age, sex, honesty of responding and ultimately for depression, normative sexual experiences of trans youth did not differ systematically from those of the mainstream, cisgender identifying youth. After adjusting for sex, age and honesty, transgender youth had increased Odds Ratios for experiences of sexual coercion and dating violence perpetration. In the final models however, no statistically significant differences were detected in the negative sexual experiences between transgender and cisgender youth.
Conclusion: Transgender identifying adolescents presented neither with delayed nor with excessively advanced sexual experiences. However, transgender youth seem to be more susceptible to subjection to sexual coercion and, unexpectedly, dating violence perpetration than their cisgender peers. However, these associations may in fact relate more closely to depression, a prevalent phenomenon among trans youth, than transgender identity itself.

Keywords: Transgender; adolescent; sexual experiences; sexual harassment; dating violence

Introduction

Sexuality is an important area of development in youth. As a part of normal sexual development sexual experiences become more common and intimate (1) as dating progresses from contacts with a romantic flavour in mixed gender group socializing to mutually satisfactory dyadic romantic relationships (2). This accumulation of sexual experiences is considered a part of the formation of sexual identity. Among the vast majority of youth sexual encounters happen within romantic relationships, while casual sexual contacts outside of a steady relationship are not common (3).

Sexual orientation indicates the gender of one's erotic interest. The term *sexual minority* refers to individuals who are sexually interested in their own or in the opposite and their own gender, individuals whose partners are the same or the same and opposite gender or individuals who identify as lesbian, gay or bisexual (LGB) (4).

Gender identity refers to how individuals experience their gender (5). It describes who and what individuals feel they are. In the vast majority of people sex chromosomes, primary and secondary gender characteristics and gender identity are uniform (*cisgender identity*). However, the perceived gender may differ from the biological sex. The term *transgender* is used as an umbrella term, subsuming a myriad of gender identities differing in one form or other from biological sex (5). *Gender dysphoria* is a state in which a person feels constantly and strongly that they are of other than their biological sex, their biological sex gives them a persistent feeling of malaise and they want to rid themselves of primary and secondary gender characteristics (6). Identifying as something other than one's biological sex does not automatically cause gender dysphoria.

Sexual experiences, sexual maturation, sexual orientation and gender identity are dimensions of their own, but they relate to each other in many ways.

Many different psychological and social factors can be presumed to slow the sexual development of trans youth (transgender identifying adolescents).

During puberty, increased hormone secretion triggers a series of physical changes, especially in the primary and secondary sex characteristics. Among trans youth and those who suffer from gender dysphoria these changes can lead to mental discomfort and concern over body image (7, 8), such as aversion towards genitals (9), and this may delay their willingness to engage in romantic and erotic encounters. On the other hand, sexual orientation and gender identity minorities may have fewer chances to find suitable partners than their heterosexual and cisgender peers simply due to the nature of belonging to a minority (10). These factors may be detrimental to sexual self-confidence and could inhibit the accumulation of romantic and erotic experiences. Additionally, gender dysphoric and transgender identifying adolescents often have concurrent mental disorders (11-13). Mental disorders in turn may result in lowered self-esteem and social isolation, that may further delay romantic and erotic experiences. On the other hand, mental disorders during adolescence are also related to early and risk-taking sexual behaviour (14-16). This may arise from inability to protect oneself, or from seeking comfort from sexually intimate encounters. Therefore, transgender identifying adolescents could, due to excessive mental disorders and developmental challenges, be especially prone to earlier and riskier sexual behaviour than is appropriate for the developmental phase.

Research on the sexuality of trans youth is scarce and the results are mixed as studies have found trans youth have similar, less or more sexual experiences than their cisgender peers. For example, a United States study on unselected population found that LGBTQ youth (lesbian, gay, bisexual, transgender, queer or questioning) had more experiences of dating and romantic relationships than their mainstream peers (10). However, this study focused on LGBTQ adolescents rather than specifically on transgender adolescents. Contrary to this, studies in the Netherlands and in Finland found that adolescents referred to evaluation due to gender dysphoric characteristics had fewer sexual experiences than their peers in the general population (17, 18) whereas a Canadian study based on activist material found no difference in the numbers of sexual experiences (19).

Not only the number but also the nature of sexual experiences of trans youth may differ from that in the general population. For example, a study found that 50% of the trans youth in their sample engaged in sex with a partner without involving their own genitals (20). This could indicate that trans youth may feel discomfort related to their genitals. On the other hand, the trans youth still engaged in sex with a partner, even if genitals were not involved, indicating sexual activity is not totally ceased even if one might struggle with questions related to transgender identity and one's body. This could indicate that transgender identity need not disturb reaching adolescent developmental milestones.

Trans youth appear to have more negative sexual experiences such as sexual harassment and dating violence than their mainstream peers (21-23). This has been explained by heterosexism, a cultural tendency to display aggression towards gender and sexual minorities, which serves to maintain traditional male and female roles and the superiority of heterosexuality over other sexualities (24-26). On the other hand, sexual and gender minority youth may also perpetrate sexual harassment more often than their peers in the general population (21). The research so far has not focused on the perpetration of sexual harassment specifically among transgender youth and has proposed no explanation for this phenomenon.

Young transgender identifying individuals, especially late adolescent/young adult trans women (male-to-female) engage in sex work in disproportionally large numbers (27, 28). The research suggests this is related to multiple factors, such as drug use and lack of perceived social support (29) which, in turn, are related to the marginalization and rejection often experienced by transgender identifying individuals (30). This may suggest that transgender youth are particularly vulnerable to subjection to interactions resulting in sexual risk taking such as commercialized sex, and at increased risk for negative sexual experiences such as sexual coercion and violence related to sexual encounters.

To summarize, the empirical research on transgender identity and sexual development in adolescence is scarce. Currently available research on the topic may further fail to distinguish between the sexual development of gender and sexual minority youth, may be based on selected samples, or focus solely on clinically referred subjects. Research has suggested a proneness to both delayed and early advancing and risk-taking sexual behaviours among trans youth. Thus, in light of the currently available research it is hard to understand the sexuality of trans youth in the community, and how this compares to that of same aged general population. As gender identity and sexual development are closely related and also major aspects of adolescent development, we feel further studies on the subject are warranted. The aim of this study is to explore the sexual experiences of trans identifying youth regardless of their sexual orientation. In more detail we ask

1) *Do normative sexual experiences differ between transgender and cisgender youth?*
2) *Do transgender and cisgender youth differ regarding negative sexual experiences (dating violence and sexual harassment)?*

Sexual development is an important and normative part of adolescence. By researching the sexual experiences of trans identifying adolescents in the population and comparing these to their cisgender peers, we can shed light on the connection between trans identification and sexual development in adolescence. Possible differences in negative sexual experiences between transgender and cisgender youth may have implications for understanding identity development in adolescence but may also reveal discriminating cultural phenomena that warrant attention.

Materials and methods

Population

The Adolescent Mental Health Cohort and Replication (AMHCR) study is a mental health survey among pupils in their ninth year of comprehensive school. The person-identifiable survey was conducted in the academic years 2002-03, 2012-13 and 2018-19 in the city of Tampere, Finland. The present study is based on the cross-sectional survey of 2018-19. Of the secondary schools (grades 7-9) run by the city of Tampere, 17 agreed to participate, while two schools could not participate due to logistic reasons. The target group of the AMHCR were the 9th graders in the participating schools. Parents were informed in advance about the forthcoming study by a message distributed through the digital application used in Finnish schools for communication between school and family. The adolescents responded to the online survey after being informed in writing and orally about the nature of the study and voluntariness of participation. They logged in to the survey using personal codes during a school lesson supervised by a teacher, who provided information on the study but did not interfere with responding. After reading the written information the adolescents were asked to indicate their consent online. The study was duly approved by the ethics committee of Tampere University Hospital and given appropriate administrative permission by the appropriate authorities of the City of Tampere. In total 1,425 adolescents logged in to the survey. Of these, 39 (2.7%) declined to respond, leaving 1,386 participants, of whom 676 (47.4%) reported that their sex (as indicated in identity documents) was female and 710 (49.8%) male. The mean (SD) age of the participants was 15.59 (0.41) years, of whom 82.4% were living with both parents. Of these 5.5% reported that their father and 4.4% that their mother had only basic education, while 24.3% reported that at least one of their parents had been unemployed or laid off during the past 12 months.

Sex and gender identity

At the beginning of the survey, the respondents reported their sex as indicated in their identity documents, with response alternatives "boy" and "girl". It was explicitly mentioned that this question referred to sex as indicated in official identity documents. According to reported sex, the respondents are referred to here as boys and girls, or males and females.

Later, in the section of the survey addressing health, respondents were asked about their perceived gender as follows: "Do you perceive yourself to be…", with response options "a boy/a girl/both/none/my perception varies" (31). According to sex and perceived gender, the respondents were categorized to one of three gender identities: cisgender identity (indicated male sex and perceives himself as a boy, or female sex and perceives herself as a girl), opposite sex identification (male sex, perceived to be a girl; or female sex, perceived to be a boy), and other/non-binary gender identity (independent of sex: perceived to be both a boy and a girl, perceived to be neither a boy nor a girl, variable). Of the respondents, 96.9% (n = 1,329) reported cisgender identity, 0.2% (n = 3) opposite sex identification, and 2.9% (n = 40) other/non-binary gender identity. In the analyses, cisgender and transgender (= opposite sex identification or other/non-binary gender identity, n = 43) were compared.

Normative sexual experiences

Experiences of steady relationships were in this study elicited by asking "Are you in a steady relationship?" Response alternatives were "yes/not now but I have

been earlier/I have not been in a steady relationship". In the analyses, going steady was dichotomized to ever vs. never. The progression of consensual sexual experiences from lighter (e.g. holding hands) to more intimate was measured by asking if the respondent had experienced (1) kissing on the mouth (yes/no), (2) light petting (fondling on top of clothes, yes/no), (3) heavy petting (fondling under clothes or naked, yes/no) and (4) sexual intercourse (yes/no) (32). All these experiences are normative, i.e. most of the adolescents gain these experiences and they are largely considered a part of ordinary development (2).

Sexual harassment

Experiences of sexual harassment were studied here as dependent variables. The adolescents were asked if they had ever experienced any of the following: (1) Disturbing sexual propositions or harassment by telephone or through the Internet; (2) Sexually insulting name-calling such as poof or whore; (3) Being touched in intimate body parts against one's will; (4) Being pressured or coerced into sex; (5) Being offered money, goods or drugs/alcohol in payment for sex. The response alternatives to all five questions were yes/no. For the purposes of the present study, we classified the items according to Fitzgerald et al. (33) as gender harassment (sexual name-calling), unwelcome sexual attention (disturbing propositions and/or harassment or unwelcome touching) and sexual coercion (pressured/coerced into sex and/or being offered money for sex).

Dating violence

Both subjection to and perpetration of dating violence were elicited. The respondents were asked "Have you ever been subjected to violent behaviour (such as hitting, punching, hair-pulling or similar) by a date or steady partner?" and "Have you ever acted violently (for example by hitting, punching, hair-pulling or similar) towards a date or a steady partner?", both with response alternatives "yes" and "no".

Confounding

Confounding factors controlled for were age, sex, honesty of responding and depression.

Age and sex

Age was calculated from date of responding and date of birth and was used as a continuous variable in the analyses. Confounding by age needs to be controlled for because during adolescence, even small age differences may have an impact on all aspects of development (34, 35). Similarly, confounding by sex is important because boys and girls develop at different rates during adolescence (36) and because subjection to sexual harassment and aggressive behaviours are unevenly distributed across sex (37, 38).

Honesty of responding

It has been demonstrated that some adolescents deliberately mispresent themselves in survey studies, exaggerating their belonging to minorities as well as their problem behaviours, symptoms and psychosocial problems (39-41). Consequently, the proportion of those belonging to minorities (such as disabled adolescents, immigrants, sexual minorities) appears implausibly high and associations between minority status and psychosocial problems are overestimated. In relation to gender identity, such overestimation may risk a perception in society that gender variant youth are victims rather than active subjects participating in building the contemporary adolescent community. A sincerity screening question (such as: "Have you responded honestly in this survey?") has been suggested as an appropriate method for controlling for such bias (40, 41). Gender identity is currently extensively portrayed in the media (42) and is thus likely to be a topic which tempts adolescents to give facetious responses. In the present study, a sincerity screening question was presented at the end of the survey as follows: "Have you responded in this survey as honestly as possible?" with response alternatives "yes" and "no". In the analyses, the sincerity question was used to categorize study participants into those who answered yes (87.7%), those who answered no (2.8%) and those who skipped the sincerity question (9.5%).

Depression

A Finnish modification of the short form of the Beck Depression Inventory (R-BDI) (43) was used to measure depression. R-BDI is a Finnish modification of the 13-item Beck Depression Inventory (44), in which options indicating positive mood have been added to each item. The questionnaire has been shown to possess good reliability in measuring depression in adolescent populations (45). All items are coded 0-3, thus the sum score of the scale ranges from 0 to 39. Depression was used as a continuous measure.

Statistical analyses

Distributions of the outcome variables were calculated among the whole sample and by sex. Sexual experiences, experiences of subjection to sexual harassment and experiences of dating violence as a victim or a perpetrator were first compared between cisgender and transgender adolescents using cross-tabulations with chi-square statistics/Fisher's

exact test where appropriate. Next, multivariate associations were studied using logistic regression. The sexual experiences, sexual harassment and dating violence variables were entered each in turn as the dependent variable. Gender identity was entered as the independent variable, age (continuous) and sex were controlled for. Next, the sincerity screening variable was added into the analyses, and finally depression (continuous). Odds Ratios (OR) with 95% confidence intervals (CI) are given. To avoid bias due to multiple testing, the cut-point for statistical significance was set at $p < 0.01$.

Results

Normative sexual experiences

Of all the participants, 80.3% reported having had a crush or been in love and 49.8% reported having been in a steady relationship. Types of sexual experiences grew scarcer according to increasing intimacy, with 51.7% reporting experiences of kissing, 37.7% reporting light petting, 27.0% reporting heavy petting and 18.6% reporting intercourse. Experience of either heavy petting or intercourse was reported by 28.5%.

Boys reported more commonly than girls all the normative sexual experiences elicited except having had a crush on or having been in love with somebody (Table 1).

TABLE 1. Sexual experiences, subjection to sexual harassment and dating violence experiences (% (n/N)) among Finnish pupils in their ninth year at school and comparison between girls and boys

	Girls	Boys	*p* girls vs. boys
Has had a crush or been in love	79.9 (518/648)	80.6 (541/671)	0.75
Ever in a steady relationship	42.0 (272/648)	57.5 (383/666)	< 0.001
Kissing	48.0 (307/639)	55.2 (365/661)	0.006
Light petting	33.5 (211(629)	41.7 (272/652)	0.002
Heavy petting	24.2 (152/627)	29.6 (190/641)	0.02
Intercourse	15.7 (100/637)	21.5 (140/651)	0.005
Heavy petting or intercourse	25.4 (158/621)	31.5 (199/632)	0.01
Gender harassment	25.5 (164/644)	21.1 (140/663)	0.04
Unwelcome attention	25.0 (160/641)	6.5 (43/664)	< 0.001
Sexual coercion	8.0 (51/637)	2.6 (17/657)	< 0.001
Subjection to dating violence	2.9 (18/618)	4.8 (30/628)	0.06
Perpetration of dating violence	1.8 (11/ 614)	3.8 (24/624)	0.02

TABLE 2. Odds Ratios (95% confidence intervals) for dating and sexual experiences, sexual harassment and dating violence among transgender identifying 15-year-old adolescents as compared to their cisgender peers in Finland

	Model 1. Controlled for sex and age			**Model 2. Controlled for sex, age and reported honesty of responding**			**Model 3. Controlled for sex, age, honesty and depressive symptoms**		
	cisgender	transgender	*p*	cisgender	transgender	*p*	cisgender	transgender	*p*
Love and romance									
Has had a crush or been in love	ref	0.5 (0.3-1.0)	0.04	ref	0.5 (0.3-1.0)	0.05	ref	0.5 (0.2-0.9)	0.03
Ever in a steady relationship	ref	2.3 (1.1-4.6)	0.02	ref	2.2 (1.1-4.6)	0.03	ref	1.6 (0.8-3.4)	0.20
Sexual experiences									
Kissing	ref	1.4 (0.7-2.7)	0.31	ref	1.3 (0.7-2.5)	0.41	ref	1.0 (0.5-2.0)	0.93
Light petting	ref	1.1 (0.6-2.1)	0.85	ref	1.1 (0.5-2.0)	0.88	ref	0.8 (0.4-1.6)	0.54
Heavy petting	ref	1.3 (0.7-2.7)	0.43	ref	1.3 (0.7-2.7)	0.43	ref	1.0 (0.5-2.19	0.98
Intercourse	ref	1.2 (0.6-2.8)	0.59	ref	1.3 (0.6-2.8)	0.57	ref	0.9 (0.4-2.1)	0.83
Heavy petting or intercourse	ref	1.5 (0.7-2.9)	0.29	ref	1.4 (0.7-2.9)	0.31	ref	1.1(0.6-2.3)	0.73
Subjection to sexual harassment									
Gender harassment	ref	1.1 (0.5-2.3)	0.79	ref	1.0 (0.5-2.2)	0.94	ref	0.7 80.3-1.5)	0.32
Unwelcome sexual attention	ref	1.3 (0.6-2.9)	0.56	ref	1.3 (0.6-3.1)	0.48	ref	0.9 (04-2.2)	0.87
Sexual coercion	ref	3.2 (1.3-8.1)	0.01	ref	3.2 (1.3-8.1)	0.01	ref	2.3 (0.9-6.0)	0.09
Dating violence									
Subjection to dating violence	ref	3.1 (1.0-9.0)	0.04	ref	2.6 (0.9-8.0)	0.09	ref	1.4 (0.4-4.7)	0.56
Perpetration of dating violence	ref	4.4 (1.5-13.3)	0.008	ref	4.3 (1.4-13.6)	0.01	ref	2.2 (0.6-7.6)	0.21

Experience of having a crush/being in love was borderline less common among transgender than cisgender adolescents (67.5% vs. 80.9%, $p = 0.03$), and experiences of steady relationships borderline more common among transgender identifying youth (66.7% vs. 49.5%, $p = 0.03$), but otherwise the proportions of none of the normative sexual experiences differed between cisgender and transgender adolescents. We found no discernible difference in reported normative sexual experiences in multivariate comparisons between cisgender and transgender adolescents after controlling for age and sex and further for honesty of responding and depression (Table 2).

Subjection to sexual harassment and experiences of dating violence

Of all participants, experiences of gender harassment were reported by 23.3%, unwelcome sexual attention by 15.6% and sexual coercion by 5.3%. Girls reported more experiences of subjection to unwelcome attention and sexual coercion than boys (Table 1). Transgender identifying adolescents reported more commonly subjection to sexual coercion than cisgender youth (15.4% vs. 5.0%, $p = 0.01$).

Experiences of sexual coercion persisted as associated with transgender identity after controlling for age, sex and reported honesty of responding, but adding depression levelled out differences between transgender and cisgender identifying youth (Table 2).

Of all the respondents, 3.9% reported experiences of subjection to dating violence and 2.8% reported perpetration of dating violence, with no statistical difference between sexes (Table 1). Before controlling for confounding factors, perpetration of dating violence was borderline more common among transgender adolescents. After controlling for age, sex and reported honesty of responding, we found that transgender identity was associated with increased Odds Ratios for reporting perpetration of dating violence (Table 2). Finally, when depression was entered into the model the difference between gender identities in dating violence perpetration was levelled out.

Discussion

In our non-selected population, normative sexual experiences of transgender identifying youth did not systematically differ from those of mainstream, cisgender identifying youth. Transgender identifying adolescents presented with neither delayed nor with excessively advanced sexual experiences. This is in line with the findings of Veale et al. (19) but differed from those of Bungener et al. (18) and Kaltiala-Heino et al. (17), who found that transgender identifying adolescents had fewer sexual experiences, and of Korchmaros et al. (10), who reported that transgender adolescents had more sexual experiences than their cisgender counterparts. However, earlier research has focused on adolescents referred to mental health services due to symptoms of gender dysphoria (17, 18), activist cohorts (19) or they have not focused specifically on transgender identifying youth but rather on LGBTQ youth as whole (10), for example. Our novel contribution is that we compared sexual development between transgender and cisgender youth in a general population sample. Clinically referred adolescents with gender dysphoria often have concurrent mental health disorders (11-13), which could inhibit or intensify the accumulation of sexual experiences, for example due to sexual risk taking or insecurities related to gender dysphoria while transgender identifying individuals recruited through LGBQT networks do not represent the general population. Our results indicate that in terms of sexual development transgender identifying youth are equally well functioning and equally developing individuals as their cisgender peers in the general population.

Several studies have suggested that transgender adolescents are excessively subjected to sexual harassment, more than both cisgender males and females of any sexual orientation (22, 46-48). However, these studies were not based on non-selected population samples, and they did not distinguish between different types of sexual harassment. In our data, transgender reported subjection to gender harassment and unwelcome sexual attention did not differ according to gender identity. This does not appear to fully support the assumption of sexually harassing interactions serving as a mechanism for maintaining heteronormativity in everyday communication.

When sex, age and honesty of responding were controlled for, gender minority youth nevertheless reported increased experiences of the most severe form of sexual harassment, namely sexual coercion. However, when depression was controlled for, transgender adolescents were not statistically significantly more likely to report experiences of sexual coercion. This warrants further study. Depression may originate from special challenges faced by gender minority youth but could also predispose to identity struggles (49). Gender minority youth could be more vulnerable to sexual coercion due to aggression originating from prejudice, but on the other hand, trauma such as sexual coercion could lead to depression. Additionally, depression could predispose to hostile attribution bias and increased reporting of traumatic experiences. In order to assess causal relationships, longitudinal studies are warranted.

Subjection to dating violence was equally common among transgender and cisgender youth. Instead, trans youth differed from their cisgender peers in reporting more commonly perpetration of dating violence, a finding that persisted when age, sex and honesty of reporting were controlled for. Dank et al. (21) reported similar findings with regard to perpetration of dating violence, but different from our results, found that transgender youth were also more frequently subjected to dating violence. The study by Dank et al. (21), however, was limited by a very small sample of transgender adolescents. Some studies have similarly observed that sexual minority youth engage in peer aggression perpetration more than mainstream youth (50, 51). This has been attributed to elevated peer victimization (50), when aggressive behaviour would be a coping mechanism, or self-protective behaviour hiding the perpetrator's own vulnerability (52). However, these explanations no not appear feasible in our data, as gender minority youth did not systematically report increased subjection to peer aggression in the field of dating and sexuality. Finally, the association between transgender identity and dating violence perpetration levelled out when depression was added into the model. This suggests that it may rather be depression, common among gender minority youth (11-13), than transgender identity that is *per se* associated with dating violence perpetration.

A novel approach in the present study was to control for reliability of responding when comparing gender minority and mainstream youth. As previously discussed, some adolescents deliberately mispresent themselves in survey studies, exaggerating their belonging to minorities as well as their problem behaviours, symptoms and psychosocial problems. Such dishonesty in responding could skew the results, especially in studies where the proportion of gender minorities within the study sample is small. Our logistic regression models indicated that controlling for honesty decreased Odds Ratios across the board. However, none of the statistically significant findings in the bivariate associations exceeded the cut-point of $p < 0.01$ after controlling for honesty, which adds credibility to our findings.

Strengths and limitations of this study

Instead of a clinical or an activist sample, we used an unselected sample of adolescents representative of Finnish youth in the general population. In Finland, nine years attendance at comprehensive school is mandatory from the age of seven until sixteen, and over 99% of children of compulsory school age are enrolled in a publicly run comprehensive school. A large portion of earlier research focusing on the area of trans youth sexuality has used selected samples. Our sample was socio-demographically representative of the 9th graders of comprehensive school in the whole country (53). We focused specifically on gender identity and compared transgender and cisgender adolescents. Many earlier studies have drawn conclusions about trans youth development based on findings concerning LGBTQ youth as whole. Thus, our study adds specifically to the knowledge of gender minority youth.

Even though our sample was not small, the small number of transgender adolescents (n = 43) limited us to analysing only transgender youth as a whole rather than separating non-binary and opposite sex identification in our study, which we concede to be a weakness.

We identified trans youth with two separate questions. Such a two-step method to identify gender identity has been recommended by Eisenberg et al. (54) and Reisner et al. (55). The first question ("What is your sex?"), which also opened the survey, focused explicitly on the responder's sex as indicated in official documents, such as birth certificate or ID card. Gender identity was then later assessed with a separate question ("Do you perceive yourself to be…") in a section assessing health, after questions about perceived health, height and weight. Same method has been previously used with Finnish adolescent population samples (31).

It has previously been shown that the presentation of a survey item may affect or influence respondents' answers. For example, eliciting "sexual harassment" may affect respondents' ability to recall events related to the subject of the question (56). In order to avoid bias, the term "sexual harassment" was omitted from the survey and experiences of sexual harassment were instead measured by asking if respondents' had experienced certain behaviours. However, in contrast to dating violence, the survey unfortunately did not include questions about perpetration of sexual harassment, so we were unable to examine potential differences or similarities between trans and cis youth in this respect.

Controlling for honesty of responding is a strength of the present study. Adolescents deliberately mispresent themselves in survey studies, exaggerating their belonging to minorities as well as their problem behaviours, symptoms and psychosocial problems (39-41), and this distorts our understanding of minorities. Honesty screening question, like in the present study, has been shown a valid method for controlling such bias (40, 41). Gender identity has been shown to be a topic vulnerable to facetious responding (31).

Controlling for age is important, because during adolescence even small differences in age may have a large impact on all aspects of development, especially on sexuality (35, 57).

In studying associations between transgender identity and sexuality related issues among adolescents, sex needs to be controlled for as sex differences have been reported in both aspects of normative sexual development (15) and traumatic sexual experiences (58), as well as in reporting transgender identity (31) and gender dysphoria (12) in adolescence.

We consider controlling for depression a strength of the present study as transgender identity is associated with depression (59) and depression is related to sexual behaviour (15) as well as to traumatic sexual experiences such as sexual harassment (58). Previous studies on the subject of gender minority youth and sexuality have not taken depression into consideration. In our data, approximately 16% of the pupils reported depression that could be classified as intermediate or severe depression. This is a typical finding in a Finnish population-based adolescent sample (60) and adds to the generalizability of our results.

Conclusion

Transgender identifying adolescents in the general population are developing similarly to their cisgender identifying peers in the accumulation and nature of normative sexual experiences. Transgender identity need not entail problems in sexual development and, on the other hand, problems or delays in emotional and physical sexual closeness are not a result of transgender identity but regardless of gender identity may indicate a need for counselling. This is important for professionals working with adolescents, for example in schools and in health care. Transgender youth seem to be more susceptible to subjection to sexual harassment and dating violence perpetration than their cisgender peers. However, this association could in fact relate more closely to depression, a prevalent phenomenon among trans youth, than transgender identity itself. Additional studies, especially longitudinal ones, are warranted in order to better understand the interplay between gender identity, sexuality related violence, and depression among adolescents.

Author disclosure statement

The authors have no conflicts of interest.

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