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What do young people worry about? A systematic review of worry theme measures of teen and preteen individuals

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Review Article

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Abstract

Excessive worry can negatively influence one's developmental trajectories. In the past 70 years, there have been studies aimed towards documenting and analysing concerns or 'worries' of teen and preteen individuals. There have been many quantitative and qualitative approaches established, suggesting different themes of contextual adolescent worry. With the hopes of future clinical utility, it is important to parse through these studies and gather what is currently known about what teens and preteens worry about and what is the state of methods used to gather that knowledge. Studies were searched for using Web of Science, PubMed, PsycINFO, Scopus and ScienceDirect databases and selected on systematic criteria. Data regarding the country in which the study took place, participants, methods of collection, worry themes and conclusions and limitations were extracted. Data were synthesised in a narrative fashion. It was concluded that currently available methods of measuring themes of adolescent worry face certain problems. Themes of worry differ substantially between the studies, with the exception of school performance seeing stable high endorsement across cultures and ages. Issues with ordering worry themes and implications for future understanding of adolescent and preadolescent worry are discussed.

Introduction

The act of worrying is considered universal and is ' . . . a negative effect characterized by uncontrollable fear, thoughts, and images and focused on negative outcomes' (Borkovec, 1994). Worry is important in understanding the development and maintenance of emotion disorders; it was introduced as a core diagnostic criterion for generalised anxiety disorder (GAD) in the DSM-III-R (APA, 1987) and ' . . . excessive worry focused on multiple everyday events' is a criterion for GAD in the 11th revision of the International Classification of Diseases (WHO, 2018). Worry is also a core component in general models of psychopathology (Wells, 2006) and is a transdiagnostic risk factor for specific psychological disorders and general psychological distress (Marshall et al., 2018). There is also evidence that worry is associated with poor physical health (Brosschot et al., 2006; Tully et al., 2013).

While from an evolutionary perspective, worry may be perceived as useful and fulfil the role of a warning/avoidance mechanism (Sibrava & Borkovec, 2006), it can also assume a pathological form (uncontrollable and impairing) (Davey & Levy, 1998). In the literature, the levels of pathological and non-pathological worry are differentiated using measures of worry frequency (Molina & Borkovec, 1994). The research of the developmental effects that worry presents is scarce, but available research suggests that excessive worry has a negative effect on important areas of adolescence and preadolescence such as social development (Vasey et al., 1994), behaviour (Suarez & Bell-Dolan, 2001), emotional development and also academic performance (Owens et al., 2012). Worry (or absence of worry) can therefore be seen as playing a major part in determining the trajectory of one's developmental outcomes.

The available measures of self-reported worry can be categorised into 'content-free' or 'content-based' measures (Joormann & Stöber, 1997); the former focuses on the frequency and intensity of worrying, and the latter focuses on the content or themes on which the worries are based. The Penn State Worry Questionnaire (PSWQ) (Meyer et al., 1990) is the most widely used 'content-free' measure of worry (Davey & Wells, 2006) that consists of 16 items that were developed to measure the frequency (e.g. 'I am always worrying about something') and intensity (e.g. 'My worries overwhelm me') of worry. It has also been developed in abbreviated (Hopko et al., 2003) and ultra-brief (Kertz et al., 2014) forms and translated into many languages such as Chinese (Zhong et al., 2009), French (Gosselin et al., 2001) and Korean (Lim et al., 2008). There are also other content-free alternatives to the PSWQ such as The Dunn Worry Questionnaire (Freeman et al., 2019), the Brief Measure of Worry Severity (Gladstone et al., 2005) and the Brief Measure of General Worry (Kelly, 2004).

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It would appear that significantly less research attention has been paid to assessing the content or themes associated about which people worry. While the merit of approaching worry in terms of frequency and intensity has to be acknowledged (Gillis et al., 1995; Mennin et al., 2005), there are important reasons why the content of worries is also important. First, the content of worry has been shown to be a differentiating factor in many anxiety disorders. For example, Dugas et al. (1998) found that worry about the future uniquely predicts GAD when compared to other worry themes in an adult sample. Additionally, Roemer et al. (1997) found that 'miscellaneous worry' (worry about minor things) was more prevalent in GAD groups. Rabner et al. (2017) also suggested that worry associated with separation anxiety changes throughout developmental periods. Second, identifying the content of worry facilitates the provision of help and support that an individual may need (Millar et al., 1993). Third, the content of worry is related to the degree of distress that is experienced. For example, Tallis (1989) showed that people with clinical levels of anxiety worried more about personal topics than those who were non-anxious.

There is also some evidence that the content of worry changes across important developmental periods, particularly childhood and adolescence. Vasey et al. (1994) examined worries of children aged from 5 to 12 years and showed that the frequency and content of worry changed with age, with older children worrying more frequently and the content changed from being about physical well-being to worries about how they are perceived and evaluated by others. Older children were also more adept at elaborating on the outcomes of worry and their worries showed more complexity (Chorpita et al., 1997). It was previously suggested that children, after age 7, start developing cognitive ability to logically manipulate concepts, form and understand rules and become less egocentric (Dasen, 1994). Furthermore, it is widely accepted that childhood worries are dependent on the level of cognitive development which warrants the possibility for worry elaboration (Muris et al., 2002). Research on worry during childhood and adolescence is important because prolonged and increased levels of worry and anxiety during these developmental periods have been linked to negative outcomes in adulthood, including substance dependence, depression and anxiety disorders (Woodward & Fergusson, 2001). Worry is also associated with negative outcomes during childhood and adolescence such as higher school dropout rates, lower academic performance and diminished social functioning (Silverman et al., 1995).

It would appear that we know more about the frequency and intensity of worry compared to the content of what children and adolescents worry about. Therefore, a systematic review was conducted to identify and synthesise the extant research literature that reported on the content of worry in young people. The primary aim was to examine available measures of the content of worry as well as identify the most common sources of worry and assess their contemporary relevance. An associated aim of the present study is to reignite the interest in the area of the content of worry. In order to fashion effective support schemes and interventions that aim to reduce the negative impact of worry on one's daily life and developmental outcomes, it is necessary to understand what people are worried about.

Method

Design

A systematic review was conducted and reported using the Preferred Reporting items for Systematic Reviews and Meta-Analysis (PRISMA) (Moher et al., 2010). The review was registered with the PROSPERO database (PROSPERO CRD42019128240).

Search methods

A systematic search of published literature was conducted using the following databases (ISI) Web of Science, PubMed (Ovid) PsycINFO, Scopus and ScienceDirect. The following search strategy was used for Web of Science and adapted for each database.

TS=((worry OR rumination OR worry* OR ruminat* OR concern* OR "worry about" OR "ruminate about" or "concern* about") AND (content OR theme* or domain* or cluster* or categor* or structure) AND ("factor analysis" OR questionnaire OR inventory OR scale OR qualitative) AND (self-expressed or self-reported or "self reported" or "self expressed") AND (youth OR young OR adolescent* OR child* OR teen*)).

Study selection

Three reviewers were involved in the study selection process (MO, GMcA, MS). Initial searches were completed by one reviewer (MO), and duplicates were removed. Results were independently screened for inclusion by title and abstract by two reviewers (GMcA and MO) and a decision to 'Include' or 'Exclude' was recorded, and there was an undecided option, 'Maybe', when the relevance of the paper was not clear. The third reviewer (MS) screened the studies which were classified as 'Maybe' and also any studies for which agreement had not been reached by the other two reviewers. Consensus was reached by discussion between all three reviewers before proceeding to full-text screening. All three reviewers independently reviewed the full-text papers, and consensus was reached on the studies to be included for data extraction. Criteria were applied that studies must (1) examine the content of self-reported worry concern and rumination of young people, (2) be published in English language, (3) published in peer-reviewed journals and (4) the age of participants had to be between 8 years and 19 years (studies that had a broader age range of participants, but reported results for the specified age range were included). Studies were excluded if they targeted clinical populations with specific physical or psychological health problems, this was to avoid including individuals suffering exclusively from pathological levels of worry that was comorbid with many psychological ailments such as irritable bowel syndrome (Lackner & Quigley, 2005), GAD (Starcevic et al., 2007), PTSD (Wells et al., 2008) or if they did not use self-report or qualitative measurements. The use of self-report quantitative methods was enforced to eliminate observer bias (e.g. parents/teachers giving their perspective on what their child is worried about).

Data extraction

Data extraction fields were agreed and piloted by independent data extraction of two studies by each reviewer. The data extraction form was agreed by all three reviewers, and one reviewer performed data extraction (MO). The extracted data included (1) the country in which the study took place, (2) details of the participants and how they were recruited, (3) how data were collected, (4) the worry-related themes that were identified – themes were identified in accordance with the methodology used within the studies, factors or clusters in quantitative studies and, in the case of qualitative studies, themes identified by the authors and (5) conclusions reached and any limitations of the study.

Data synthesis

After data extraction, a narrative synthesis of all studies was conducted. The content of worries as described in each paper was summarised and domains were generated. The sampling strategy, sample size, methodology, domains identified and limitations for each of the included studies are presented in Table 1. Because of the wide range of methodologies and findings, a short summary of findings of each of the studies is provided.

Results

Initial searches returned 3,211 hits which was reduced to 2,596 after duplicates were deleted. Screening based on title and abstract screening resulted in 15 studies being retained. After third reviewer input at this stage, a further five studies were removed as a result of them not presenting suitable samples. Additionally, the reference sections of the remaining 10 studies were screened for suitable additions and based on that search – 2 studies were added (Table 1). Full-text analysis was then performed on 12 studies.

Figure 1 shows a flow diagram of the process and results.

Included studies

The final 12 studies included a total of 9,523 participants. Study sample size ranged from 52 to 3,983. Four studies were conducted in the UK, three in the USA, one in each of Singapore, Israel and Turkey. Two studies were conducted across multiple countries (Netherlands and Belgium/USA, Canada and Australia). Table 1 presents the final papers included in the review.

Study participants

All samples were recruited from schools and the studies were published from 1958 (Schutz, 1958) until 2017 (Fisher et al., 2017). The majority of studies recruited participants from post-primary level education (Ang et al., 2007; Fisher et al., 2017; Friedman, 1991; Miller et al., 1993; Miller & Gallagher, 1996; Schutz, 1958; Young et al., 2016), two studies recruited from primary level education (Muris et al., 1998; Pintner & Lev, 2000), three studies recruited from across primary and post-primary (D'Andrea, 1994; Sahin & Sahin, 1995; Violato & Holden, 1988) and six of the 12 studies recruited volunteers (Ang et al., 2007; D'Andrea, 1994; Fisher et al., 2017; Miller et al., 1993; Muris et al., 1998; Young et al., 2016). The youngest participants were recruited by Muris et al. (1998) and were aged 8 years. The oldest were recruited by Sahin and Sahin (1995), Miller and Gallagher (1996) and Violato and Holden (1988) and were aged 19 years. The broadest age range was 9–18 years (D'Andrea, 1994).

Data collection

One study used an open question method of data collection (Friedman, 1991). Four studies used pre-existing scales (D'Andrea, 1994; Pintner & Lev, 2000; Sahin & Sahin, 1995; Schutz, 1958): the Billett-Starr Youth Problems Inventory (Billett & Starr, 1956), the Worry Inventory (Adolescent Health Program, 1987) and an inventory developed by Works Progress Administration at Teachers College and a scale developed by Violato (1996). Three studies were concerned with the development and validation of worry scales (Miller et al., 1993; Miller & Gallagher, 1996; Violato & Holden, 1988). Two studies developed their own questionnaires (Ang et al., 2007; Muris et al., 1998). One study performed an analysis of diary content (Fisher et al., 2017). The other used pictures to stimulate discussion around issues related to worry (Young et al., 2016).

Summary of selected papers

Friedman (1991) examined the concerns of Israeli adolescents and compared the findings to those of Vasey et al. (1994) and reported that older adolescents reported significantly fewer problems compared to their younger counterparts. Vasey et al. found that worrisome thoughts increase in prevalence after the age of 8 years. These results may suggest a certain 'high point' of worry intensity in adolescents at a certain age. The most prominent concerns the participants expressed were centred on 'studies and career' and a 'Social I' category which represented interpersonal relations and use of leisure time. These concerns were reported by 79% of the participants. Health concerns and drug use were reported to be of minimal concern and were endorsed by less than 1% of the participants. The study also identified concerns specific to the Israeli sample, about the mandatory army service and existential issues. These themes could be related to the specific political, cultural and social situation in Israel. For Jewish youth in Israel, transition to adulthood is closely associated with serving in the military and traditional and religious values (Levy et al., 2012). These sources of worry are expressed in statements such as 'Should I volunteer to a combat unit?' and 'What is the role of the Jews in the world?' which highlight the importance of culture and current sociopolitical situation as worry theme contributors.

Sahin and Sahin (1995) examined worry themes among Turkish youth. They used an existing scale by Violato and Holden (1988) and added an additional 10 items generated as a result of a pilot study and provided further validation by using factor analysis. The results largely replicated the original factor structure reported by Violato and Holden (1988) and was composed of 'Social Identity Concerns', 'Local and Universal Concerns', 'Interpersonal Relations', 'Personal Future Concerns' with the addition of 'Drug use' factor introduced by the findings of the study. The authors found that 'Personal future concerns' (a factor which included themes of education and career) was endorsed the most and was followed by 'Interpersonal Relations'.

Fisher et al. (2017) used a diary study to examine what worry sources and consequences were identified by adolescents aged 16–18 years. The study involved healthy individuals and individuals suffering from chronic pain and provided separate reports for each group. While the study did not find significant differences between the two groups in terms of endorsement of worry themes, the results might be attributable to a small sample size and theming worries into broad categories. This qualitative approach provided information on many worry dimensions, such as extent of interference, emotion associated with the worry, its consequences ('what would happen if the worry came true?') and the strength of belief that the consequence would happen. The strength of this study is that it demonstrated a broad range of worries that adolescents have.

Young et al. (2016) compared worry themes reported by individuals aged between 15 and 18 years, with and without a learning disability. In the nondisabled sample, 'Failure' was the most commonly reported theme. However, this 'failure' pertained mostly to an individual failing at school exams. This is similar to many other investigations of worry content, suggesting that school-related issues are common (Table 1).

Table 1. Summary of papers included in the systematic review

Citation	Country	Sample and recruitment	Data collection method	Themes	Conclusion	Limitations
Areas of concern and sources of advice for Israeli adolescents (Friedman, 1991)	Israel	*N* = 1645 (42% female) Age: 15- and 17- years Method: Three schools selected at random, all 11th and 9th graders sampled. Representative of the population.	Demographic information obtained. An open-ended question asking the participant to list their three predominant worries.	• School studies • Army service • Interpersonal relations • Use of leisure time • Relationships with family • Future • Politics • Purchases • Appearance • Youth movement • Health • Relationships with teachers • Existential issues	Boys more concerned with existential issues, army service, studies and career than girls. Girls more concerned with personal issues (relationships, appearance).	Study from nearly 30 years ago Arbitrary classification of themes (not arrived at through replicable, statistical means) Specific to Israel population
Dimensions of Concerns – the Case of Turkish Adolescents (Sahin & Sahin, 1995)	Turkey	*N* = 957 (49% female) Age: 11–19 years Sampled from six schools in Ankara. Representative of the population.	Using an existing scale (Violato & Holden, 1988). Pilot study included an open-ended question out of which 10 additional questions were generated.	• Social and identity concerns • Local and universal concerns • Interpersonal relations • Personal future • Use of drugs	Concerns pertaining to 'personal future' reported as most pressing.	Study from 1995 – not contemporary Some factor loadings below 0.32, cross loadings not reported.
Everyday worry in adolescents with and without chronic pain: A diary study (Fisher et al., 2017)	UK	*N* = 60 (40 with no chronic pain out of which 79% female) Age: 16–18 years Sampled from five schools. Volunteer participants	Qualitative analysis of the contents of diaries kept over the course of 7 days.	• Health • Relationships • Personal competence • Other	Personal competence reported being the predominant worry followed by the worry of being judged by others.	Small sample size
Leaving school: A comparison of the worries held by adolescents with and without intellectual disabilities (Young et al., 2016)	UK	*N* = 52 (27 with no intellectual disabilities out of which 64% female) Age: 15–18 years Volunteer sample from schools in western Scotland	Qualitative. Participants were given pictures representing worry topics (e.g. workplace) and asked whether this was a source of their worry. Interviewer asked them to describe those subjects of worry.	• Death • Failure • Decisions • School • Relationships • Family • Bullying • Work • Further education • Health • Friendship • Money • Loneliness • Home • Appearance	Predominant worries among individuals with no intellectual disability concerned topics of failure and future education (failing at college exams).	Small sample size Study was focused on worries pertaining to young adolescents starting their university educat on.

Patterns of personal problems of adolescent girls (Schutz, 1958)	USA	*N* = 500 (100% female) Age: Adolescent USA high school students, grades 10 and 11 – presumably 15–17 Two Florida, high Schools sampled as a part of the national standardisation programme in May 1956.	Billett–Starr Youth Problems Inventory (Billet & Starr, 1956)	• General personal anxiety and insecurity • Tension concerning relationships with others • Difficulties in getting along with parents	Identification of three clusters of worry.	Study does not meet contemporary standards. No cluster endorsement reported. Study included only adolescent girls.
The concerns of Native American youth (D'Andrea, 1994)	USA	*N* = 148 (49% female) Age: 9–18 years Volunteer participants from one school in North Dakota.	The Worry Inventory (Adolescent Health Program, 1987)	• Personal worries • Family-related worries • School-related worries • Peer-related worries • Moral/social worries	School-related worries and fear of parents dying showed strongest responses.	Study from 1994 – not contemporary Specific sample (Lakota Native Americans)
The 'Things I Worry About' Scale: Further developments in surveying the worries of postprimary school pupils (Millar & Gallagher, 1996)	UK	*N* = 3983 (60% female) Age: 13–19 years Representative sample from postprimary schools in Northern Ireland	'Things I Worry About' Scale (Millar et al., 1993)	• Starting work/college • Opposite sex • Home relationships • Academic schoolwork • Choosing a job/course • Verbal communication • Obtaining a job/ course • Myself • Communication at home • Money matters • Social efficacy • Change and transition • Information seeking	Academic schoolwork theme endorsed the most	Study from 1996 – not contemporary
Validation of the adolescent concerns measure (ACM): Evidence from exploratory and confirmatory factor analysis (Ang et al., 2007)	Singapore	Study 1 (EFA): *N* = 619 (53% Female) Age: 12–17 years Voluntary sample from a single school in Singapore Study 2 (CFA): *N* = 811 (48% Female) Age: 11–17 years Voluntary sample from two schools in Singapore	The study developed the questionnaire	• Family concerns • Peer concerns • Personal concerns • School concerns	Four themes identified	Sample specific to one city (Singapore)
Worries of school children (Pintner & Lev, 1940)	USA	*N* = 540 (50% female) Age = 10 and 11 years Sampled from children in New York schools.	Study uses an inventory developed as a project by 'Works Progress Administration at Teachers College'. No citation provided.	• School • Family • Personal health and well-being • Social adequacy • Economic • Ornamental	Worries about school performance and family issues were most endorsed.	Study from 1940 – not contemporary Conclusions derived from frequency of answers.

(*Continued*)

Table 1. (*Continued*)

Citation	Country	Sample and recruitment	Data collection method	Themes	Conclusion	Limitations
Worry in normal children (Muris et al., 1998)	Netherlands and Belgium	*N* = 193 (46% female) Age= 8–13 years Voluntary sample from three regular primary schools in Netherlands and Belgium.	Questionnaire developed for the purposes of the study. Study also used an interview.	• School performance • Dying or illness of others • Getting sick • Being teased • Making mistakes • Appearance • Specific future events • Parents divorcing • Whether other children like me • (More worries endorsed by less than five participants)	School performance endorsed the most	Study from 1998 – not contemporary
*A confirmatory factor analysis of a Four-Factor Model of Adolescent Concerns (Violato & Holden, 1988)	Canada USA Australia	*N* = 439 (40% female) Age= 12–19 years Representative sample gathered from 10 junior high schools and high schools	Study validated the questionnaire	• Health and drugs • Future and career • Personal self • Social self	School related and physical appearance were the most endorsed.	Medium (~0.5) cross-loadings between items of social and personal self. Study from 1987 – not contemporary
*Surveying Adolescent Worries: Development of the 'Things I Worry About' Scale (Millar et al., 1993)	UK	*N* = 387 (50% female) Age = 15 and 16 years Voluntary sample taken from 10 post-primary schools.	Questionnaire developed from a review of previous studies. Open-ended questions included in the study.	• Myself • At home • Job finding • Social confidence • Choosing a job • Opposite sex • Verbal communication • Starting work • Information seeking • Powerlessness	The study reported the factor structure of the questionnaire only. Information about endorsement of a particular factor is not provided.	Study from 1993 – not contemporary

*Publications were included as a result of reference screening.

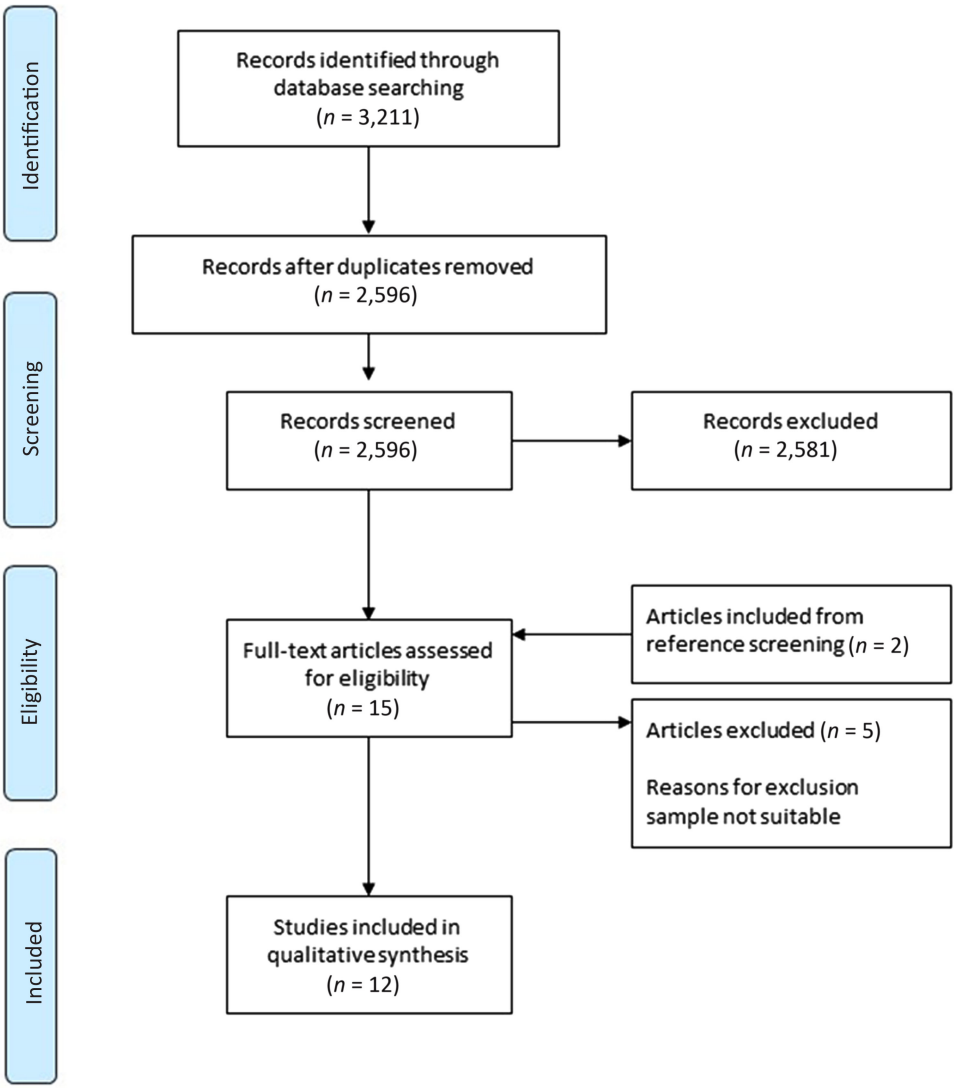

Fig. 1. Flow diagram of literature search process.

Schutz (1958) examined patterns of endorsement of different worry sources among teenage girls. The study used an existing inventory which was available in two versions – 'Junior' and 'Senior' and only items that existed in both were used. Additionally, the study examined worries that were deemed 'very serious' or 'moderately serious' by a panel of specialists.

The study of Native American youth by D'Andrea (1994) was based on a small sample from a specific population. However, the study provides important insights pertaining to universality and specificity of certain worries. While school-related problems were highly endorsed, the fear of one losing a parent was common. While the study did not explore the predictors of specific worries, the authors theorise that these results may be due to sampling from a matriarchal culture. Overall worries of girls were more centred on maintaining stability of both family and community.

The goal of the studies by Millar et al. (1993) and Millar and Gallagher (1996) was to develop and validate the 'Things I Worry About' (TIWA) scale that assessed worry themes among nonadults. The initial study in 1993 started with 86 items from 8 pre-determined categories, but these were refined through factor analysis into 10 categories. The study also used open-ended questions and the analysis of these responses identified a further three themes which were not examined statistically during the initial development. Later, in 1994, a revised TIWA scale including the 13 categories was administered to a large sample of young people. This examination provided moderate changes to the scale retaining the number of 13 factors but not the theorised structure (Table 1). Further analysis suggested a large second-order factor model with each of the subscales loaded onto a single underlying construct. Academic schoolwork constantly remained the most endorsed theme among all ages sampled (13–19 years). The study of Millar and Gallagher (1996) presented the highest quality out of all the papers included in the study. It, however, faced a problem of potentially not capturing contemporary problems of adolescents which we expand upon in the discussion section.

Ang et al. (2007) developed a measure aimed to assess concerns of adolescent students from Singapore. Researchers used both exploratory and confirmatory factor analyses to arrive at a 4-factor solution (Table 1). The factors were labelled 'Family Concerns', 'Peer Concerns', 'Personal Concerns' and 'School Concerns'. However, the authors do not provide information pertaining to which of the factors was the most endorsed. The study presented some unique variations that the authors ascribe to the population used when compared to previous examinations of worry. Namely,

the 'I have confidence in myself' item, expected to load onto the 'Personal concerns' factor, loaded more onto the 'School concerns' factor. The authors note that school achievements are an important part of the identity of Singapore youth.

The study by Pintner and Lev (1940) does not satisfy certain modern standards of conducting scientific research. For one, the worry themes were arrived at through non-statistical, non-systematic means. However, the study provides a window into what worry items were endorsed the most in the past. Interestingly, and in synch with more modern examinations, 'failing a test' was ranked the highest. Uniquely, 'witches' as a source of worry was endorsed by ~21% of participants (aged 10 and 11 years), it was, however, the least endorsed item.

Muris et al. (1998) examined normative worry in children. They have used a scale developed for the purposes of the study and also interviewed their participants with regard to worry frequency and content. The study does not provide information about how the individual items of the scale cluster together. While qualitative examination that supplemented Muris et al.'s examination remedies that to an extent, if the examination was to be used in clinical settings, it presents a cost of not being a one-tool parsimonious method. Nevertheless, school performance, in line with other examinations of worry, was endorsed the most.

The study by Violato and Holden (1988) was obtained for the purposes of the current review through reference screening. Their scale was used as a base for the examination provided by Sahin and Sahin (1995, Table 1). The researchers used both exploratory and confirmatory factor analyses to arrive at a four-factor solution. School and physical appearance were endorsed the highest with 'existential problems' being considered secondary. They have also suggested two 'identity' constructs dubbed 'Personal Self' and 'Social Self'.

Limitations of the studies

The present study faces a number of limitations. This was to be expected as included studies spanned close to 80 years of scientific inquiry, used a wide variety of methods and different samples. For example, the methods used by Schutz (1958), as well as Pintner and Lev (1940), would be considered dated by contemporary standards; therefore, they may serve as a historical description of worry rather than reflecting current themes. However, most of the studies included in this review were performed at least two decades ago, with qualitative examinations being more modern (Fisher et al., 2017; Young et al., 2016). These examinations, however, were not specifically aimed at identifying worry content of the general populations and therefore analyses of only parts of these studies could be included. A number of studies were performed using non-western populations. This highlighted an important issue in the study of Worry-worries influenced by culture, socio-economic status, current or recent political events, war, religious sensibilities, gender roles, etc. may not be transferrable to all populations and, as such, presented a challenge to the generalisability of the findings. Strong cross-loadings of individual factors were also identified in a number of studies as well as insufficient Cronbach's α (see: Sahin & Sahin, 1995; Violato & Holden, 1988; for a rationale: Tabachnick & Fidell, 2007).

Discussion

The aim of this review was to investigate available measures of worry themes among teens and preteens. We have found many different themes reported, with concerns pertaining to academic achievements being endorsed the most across the studies. The construct of 'worry' was conceptualised as 'worry', 'concern' or 'personal problem' despite the search terms also including a category of 'rumination'.

One of the aims of this study was to identify areas of worry expressed by teens and preteens. Therefore, no consideration was given towards the exact extent to which certain worry themes were endorsed, their consequences, frequency, affective response and perceived impairment associated with the worry. We have found that themes of personal competence related to school performance were a consistent most-endorsed theme. The similarity between the studies in this regard provides initial evidence towards a certain universality of these concerns that stem from both developmental dynamics and tasks placed upon adolescents by the culture they reside in. However, one must be mindful that the results are limited by the fact that included studies generated their data based on samples from developed countries with access to national education programmes. It is therefore impossible to assume what role the involvement of teens and preteens in school life plays when examining worry (e.g. would the levels of worry diminish in an environment where education is not provided, would different themes increase in endorsement etc.). Furthermore, the studies included in the review provide little justification, from a developmental perspective, to consider worries that are specific to particular developmental stages. Psychometric scale development and qualitative studies can be exploratory, with little attention given towards validating these measures based on the development of the individual, instead, just relying on age. Moreover, some studies of worry themes used wide age ranges (e.g. 11–19 in Sahin & Sahin, 1995; 13–19 in Millar & Gallagher, 1996), which may introduce a confound stemming from dynamic and profound changes that occur during such periods. Cultural context also plays a role. This is exemplified in 'Army service' emerging as a theme in the study by Friedman (1991), which included adolescents for whom army service and threat of being involved in armed combat is salient. This is also noted in the study by D'Andrea (1994) which suggested high endorsement of worries pertaining to the fear of losing one's parent (not addressed as salient). Ang et al. (2007) suggest that domain-specific problems in an individual's environment predict domain-specific concerns expressed by that individual. This, while not empirically tested, offers a promise of examining one's concerns to infer how one perceives their environment.

Differences in worry domains may have been influenced by the methodology used. The differences in factors arrived at through factor analyses are notable. The individual items from each analysis present some degree of similarity (expressed in 'school performance' being consistently highly endorsed), with minor cultural, socio-economical and zeitgeist differences (e.g. concerns associated with army service, fear of witches). The inconsistency of the themes arrived at can be explained by different studies differing in 'resolution' – for example, the theme of 'Personal Competence' conceptualised in the study by Fisher et al. (2017) comprises many sub-themes, including school performance, which was recognised as a separate theme by other studies. Similarly, most of the items included in 'Social efficacy' and 'Communication at home', from the study of Millar and Gallagher (1996), were included (or represented by similar items) in the factor 'Interpersonal relationships' from the study by Sahin and Sahin (1995). This suggests different levels of organisation between the narrow facets and broad domains of worry themes – higher-order vs. lower-order conceptualisations. This issue of differences in ordering of the themes also

extends to qualitative studies. For example, Young et al. (2016) and Fisher et al. (2017) differ in the number of themes found while simultaneously specific themes of the latter fit under the 'umbrella' themes of the former (notably, the samples involved participants of similar age).

While the clinical utility of the obtained themes was not the aim of this review, future studies should focus on establishing themes that maximise external validity (especially in clinical contexts), perhaps through a factor analytical approach to worry themes. Furthermore, as they stand right now, measures of worry domains should be frequently updated not only to utilise newer, more refined methods but also to 'catch-up' with the everchanging culture zeitgeist. The challenge of developing such scales would be their ability to be utilised in cultures outside of the sample it was conceived with, for example, in terms of the ever-shifting socio-political landscape (e.g. 'the aids problem', Sahin & Sahin, 1995). Another issue highlighted by the present examination pertains to the utility of findings. Examining themes of worry in a broad or narrow way should be tempered by their importance relative to specificity of what those themes may predict.

Notably, this need for providing updates for psychometric measures of 'worry' has seemingly gone unaddressed in recent years. The last 20 years brought a generation of adolescents facing unique problems compared to their predecessors, which can be mainly attributed to the proliferation of internet and social media use (Borca et al., 2015). Existing measures of worry themes have not been developed in accordance with contemporary social landscape which is dominated by constant internet access with its detriments (e.g. using internet as a coping mechanism to a pathological extent; McNicol & Thorsteinsson, 2017) and advantages (e.g. empathy development; Vossen & Valkenburg, 2016).

The present study does not paint an encouraging picture for the field. Currently, no one approach to the measurement of worry themes can be considered a 'gold standard' to be used worldwide. This is both due to outdated methodologies, lack of consideration for intercultural generalisability (highlighted by this study) and instability of worry themes across time. Reliable, valid and user-friendly self-report questionnaire could be a cost-effective way to obtain information on what young people worry about. However, the field of worry measure currently faces a problem of no new self-report questionnaires being developed. The last such measure was developed over 25 years ago (Millar et al., 1993). Qualitative approaches, while more sensitive to specificities of the sample, are not cost effective and able to be deployed on a large scale.

The previously mentioned problem of ordering the domains (themes) of worry is not irreconcilable between the studies. The observation that there may be themes of worry that could potentially fit under other 'umbrella-themes' could be considered as indicative of the studies moving across one continuum of scope of examining worry themes (higher order vs. lower order) as opposed to describing separate dimensions of worry. The problem the field faces could be that of proliferation of different 'localised' methods of measurement and not necessarily conflicting results. A hypothetical example of a higher-order theme free from sociocultural influences (therefore solving the previously mentioned problem of generalisability) could be, for example, a 'Self actualisation' theme. This higher-order theme in turn could comprise lower-order themes such as 'Duty fulfilment', 'Social standing' or 'Hobby/leisure development'. The example is just provisory but serves to illustrate that an effort towards a general worry theme measure of high ecological validity is possible. While our search addressed only self-reported measures of adolescent worry that examined themes, another considerable body of worry research is concerned with examining worry frequency in a trait-like manner (Meyer et al., 1990). An example of the latter – the PSWQ – holds over 4,000 citations and is a classic in worry research. However, studies of themes of worry and frequency of worry seem to be largely ignorant of each other, as exemplified in measures gathered in the present examination – not one developed scale examined frequency of worry in addition to worry themes.

In conclusion, there have been many attempts at measuring themes of the worry in teens and preteens. Current scientific nomenclature is seemingly not differentiating between 'worry' and 'concern' and is using the terms interchangeably. Out of many themes identified, school performance emerged as a constant, most widely endorsed theme. Psychometric scales of measurement are in need of an update to reflect problems of contemporary teens and preteens. Quantitative measures of worry themes differ in how these themes were conceptualised – some have found very specific themes, others arrived at more broad classifications. These classifications should be reconciled in future research endeavours that are sensitive to the problems of universality that such measures present. Available measures do not examine worry themes in addition to frequency of worry. Currently, if one wants to know 'What do teens and preteens worry about?' they should answer this question using qualitative methods that are sensitive to nuanced socioeconomic and cultural influencers of worry. The last developed psychometric scale was conceived more than 25 years ago. Quantitative measures were developed without much consideration for generalisability of their results to populations that are socially and culturally different – be it by the virtue of being born to a different culture or being born to the same culture but at a different time.

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