# A Study Protocol: The Role of Relational Orientation in the Relationship Between Social Media Use and Mental Health in Adolescents

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## ABSTRACT

There is a complex relationship between social media use and mental health outcomes. To explore this complexity and understand how social media influence adolescent mental health, a two-phase, explanatory sequential mixed-method study will be conducted. Firstly, the quantitative phase will involve surveying a healthy sample of 400 adolescents attending secondary schools in the UK (n=200) and Turkey (n=200). We will use the survey to investigate the moderating effect of relational orientation in a cross-sectional study, in which participants will be selected from secondary schools in England or the United Kingdom and in Turkey. Secondly, the qualitative phase will involve interviewing a mixed sample of 12 clinical and non-clinical adolescents in England or the UK. In these interviews we will explore key quantitative findings in more detail, for example, how and why adolescents use social media, and the role of social media in the development and maintenance of mental health well-being. The strengths and limitations of the study proposal have been discussed.
*Keywords:* social media, anxiety, depression, adolescents, culture, relational orientation

## 1. Background

### 1.1 Social media

The term "social media" is a broad term which refers to the wide range of internet-based channels that allow users to create a public or semi-public online profile, communicate with others, build social networks and selectively self-present with both broad and narrow audiences (Boyd & Ellison, 2007; Carr & Hayes, 2015). Any website that allows social interaction, self-expression and self-presentation is considered as social media, including social networking sites such as Facebook, Instagram, MySpace and Twitter, video sites such as YouTube, and blogs (O'Keeffe, Clarke-Pearson, & Council on Communications and Media, 2011).

Social media have become an inseparable part of our daily social activities. The number of social media users and the time spent on social media has gradually increased since 2010 (eMarketer, 2017; Statista, 2017). The most enthusiastic users of social media are adolescents and young people (Allen, Ryan, Gray, McInerney, & Waters, 2014). According to the Pew Research Centre (Lenhart, 2015) and Statista (Richter, 2018), the number of adolescent social media users has increased dramatically since 2012. A recent survey, which was conducted on a U.S sample, showed that 95% of adolescents aged 13-17 years have access to a smartphone and almost half of them reported that they go online often (Anderson & Jiang, 2018).

## 1.2 The influence of social media and the mental health of adolescents

In recognition of the prevalence of social media use and the extent of this exposure, the impact of social media on the mental health of adolescents has received greater attention and is a highly controversial issue. In order to identify and examine the evidence relating to the influence of social media use on the mental health of adolescents, a systematic literature review was conducted by Keles, McCrae and Grealish (2019). Through the search of Medline, Embase, PsychINFO, CINAHL and SSCI, 13 studies were identified as eligible for inclusion. Twelve studies used a cross-sectional research design. The findings of this review were classified into four domains of social media: time spent, activity, investment and addiction. Investment differs from time spent and activity and it refers to the extent of effort that the users put into developing their social media accounts (e.g. spending time and money to create effective contents such as images and videos for their social media accounts) to attract others. While the higher investment on social media and addiction to social media were positively correlated with depression/depressed mood in adolescents (see Neira & Barber, 2014; Vernon, Modecki, & Barber, 2017; Hanprathet, Manwong, Khumsri, Yingyeun, & Phanasathit, 2015; Li et al., 2017; Wang et al., 2018), the relationship between the time spent on social media and mental health outcomes, such as anxiety and depression as well as between activities on social media and mental health outcomes were too complex for a straightforward statement.

## 1.2 Study aim and rationale

The over-arching aim of this study is to explore how one aspect of culture, namely relational orientation, influences the relationship between social media use and mental health outcomes (i.e. anxiety and depression) in adolescents.

The systematic review informed the rationale for conducting the quantitative phase of this protocol (Keles et al., 2019). It showed that the relationships between the time spent on social media and mental health outcomes, such as anxiety and depression as well as between activities on social media and mental health outcomes were too complex for a straightforward statement. Although there are studies which investigated this complexity through the confounding, mediating and moderating factors (e.g. insomnia, social support, rumination, age, gender) that may contribute or exacerbate the proposed relationship, the role of culture-related factors in the relationship between social media use and mental health in adolescents has been ignored to the best of our knowledge. According to the Hall's (1976) cultural iceberg model, culture is like an iceberg and visible elements of culture (i.e. behaviours) are dictated by the hidden elements of culture (i.e. motives, values, priorities etc.). In the context of social media, it can be assumed that individuals' online behaviours might be determined by their cultural values, priorities, beliefs and thought patterns. Therefore, individuals' motives for using social media and online behaviours may differ across cultures and such differences may explain the complexity and inconsistencies in the relationship between social media use and mental health in adolescents.

However, since culture is a complex concept, this study will focus on only one aspect of culture: relational orientation. The term 'relational orientation' is defined by Silverstein, Bass, Tuttle, Knudson-Martin and Huenergardt (2006) as the way individuals orient themselves in relation to others. Relational orientation refers to the cultural dimension of vertical/horizontal individualism and collectivism (Triandis, 1995) within this context. Individualism indicates a loosely-knit social network between individuals whereas collectivism indicates a tightly-knit social network within a group of individuals in which individuals are expected to be obedient to each other (Hofstede, 2011). While vertical dimension refers to the 'different self' (societal inequality), the horizontal dimension refers to

the 'same self' (equality) and highlights that individuals should have similar life standard (Triandis, 1995).

***Quantitative phase:*** This phase is designed to test hypotheses and comprehensively explore the moderating effect of relational orientation in the relationship between social media use and mental health in adolescents by using the theory of individualism and collectivism proposed by Triandis (1995). According to Hofstede's cultural dimension scores, United Kingdom (UK) is ranked as third in the list of the individualist countries with the score of 89 whereas Turkey has a score of 37 in individualism (Hofstede, 2001). Thus, this phase will test its hypotheses through comparing Turkish adolescents, being predominantly collectivist, and British adolescents, being highly individualist.
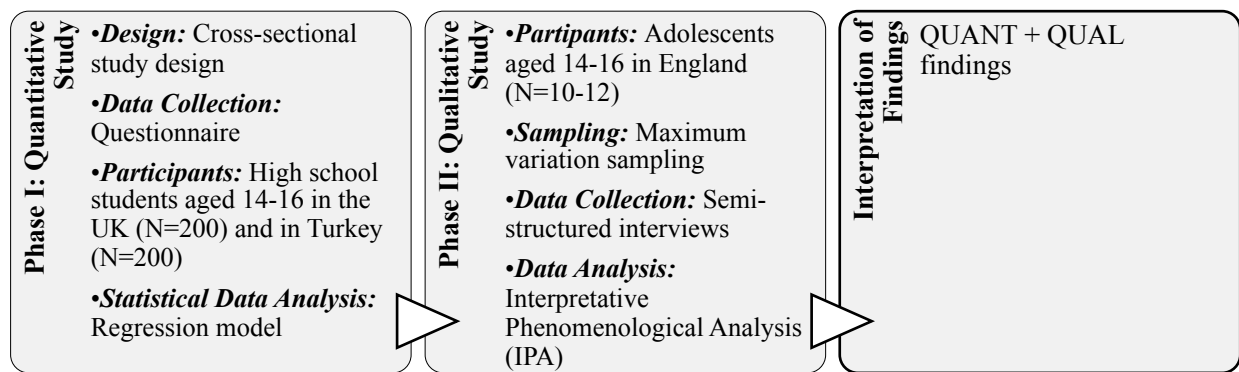
***Qualitative phase:*** The systematic review (Keles et al., 2019) also identified that the number of quantitative studies in literature was substantially higher than qualitative studies and thus, more qualitative studies are needed to comprehensively understand the research problem. This phase has been designed to address this imbalance and to explore the quantitative findings in order to describe and explain how and why adolescents from different cultural backgrounds use social media, and the role of social media in the development and maintenance of mental well-being. In this phase, a mixed of clinical and non-clinical samples will be interviewed to examine the relationship between social media use and mental ill-health in adolescents. Emotional disorders are widely experienced by non-clinical adolescents. The prevalence rates of emotional disorders are about 10 to 20% in adolescents and are linked with higher rates of anxiety, risky behaviours, poor physical health, obesity, substance use disorders, and suicide (see Avenevoli, Knight, Kessler, & Merikangas, 2008; Barbe, Bridge, Birmaher, Kolko, & Brent, 2004; Clark, Jones, Wood, & Cornelius, 2006; Kessler et al., 2005; Kessler et al., 2007). These studies show that early onset depression is a potent predictor of the recurrence of depressive disorders across the lifespan. Therefore, a mixed group will be selected as it was considered important to explore the role of culture in the use of social media in adolescents without significant mental ill-health difficulties and those who have more complex mental ill-health needs.

## 2. Methods/Design

### 2.1 Overall study design

A cross-cultural comparative study will be undertaken to explore the influence of social media on depression and anxiety in adolescents, employing an explanatory sequential mixed-methods design. The benefits of using a mixed-methods approach include having a richer data to comprehensively explore and understand the research problem and being able to clarify and corroborate research findings through the triangulation of different methods and data sources. In a sequential explanatory mixed-methods design, the quantitative data is collected and analysed first, and then qualitative phase is conducted. In the end, both quantitative and qualitative findings will be interpreted together by combining results from both methods and data sources. We will describe and seek to explain potential reasons for contradictory and complementary findings between quantitative and qualitative approaches (Moffatt, White, Mackintosh, & Howel, 2006). Figure 1 demonstrates the study design flowchart.

**Figure 1.** Explanatory sequential mixed-method study design flowchart.

| Phase I: Quantitative Study | Phase II: Qualitative Study | Interpretation of Findings |
|---|---|---|
| •*Design:* Cross-sectional study design<br>•*Data Collection:* Questionnaire<br>•*Participants:* High school students aged 14-16 in the UK (N=200) and in Turkey (N=200)<br>•*Statistical Data Analysis:* Regression model | •*Partipants:* Adolescents aged 14-16 in England (N=10-12)<br>•*Sampling:* Maximum variation sampling<br>•*Data Collection:* Semi-structured interviews<br>•*Data Analysis:* Interpretative Phenomenological Analysis (IPA) | QUANT + QUAL findings |

## 2.2 PHASE I: Quantitative study

### 2.2.1 Aim and objectives

The quantitative study aims to explore the moderating effect of relational orientation (vertical/horizontal individualism-collectivism) on the relationship between social media use and mental health in adolescents by using the theory of individualism and collectivism (Triandis, 1995). There are three specific objectives in phase I: (1) to identify adolescents in the UK and in Turkey in terms of their relational orientation (horizontal individualist, horizontal collectivist, vertical individualist, vertical collectivist), (2) to explore the relationship between social media use and mental health in adolescents, and (3) to explore whether relational orientation moderates the proposed relationships.

### 2.1.2 Hypotheses

Following hypotheses will be tested:

*Hypothesis 1:* There would be a significant relationship between time spent on social media use and mental health outcomes (i.e. anxiety and depression)

*Hypothesis 2:* There would be a significant relationship between social media activities (i.e. number of friends, the type of friends, duration of membership) and mental health outcomes (i.e. anxiety and depression).

*Hypothesis 3:* There would be a significant relationship between social media use intensity and mental health outcomes (i.e. anxiety and depression).

*Hypothesis 4:* There would be a significant relationship between cultural dimensions (vertical/horizontal individualism-collectivism relational orientations) and mental health outcomes (i.e. anxiety and depression).

*Hypothesis 5:* The interaction of time spent on social media use and cultural dimensions (vertical/horizontal individualism-collectivism relational orientations) would significantly influence anxiety and depression.

*Hypothesis 6:* The interaction of social media activities and cultural dimensions (vertical/horizontal individualism-collectivism relational orientations) would significantly influence anxiety and depression.

*Hypothesis 7:* The interaction of the intensity of social media use and cultural dimensions (vertical/horizontal individualism-collectivism relational orientations) would significantly influence anxiety and depression.

**Figure 2.** The hypothesized model.

## The Moderating Effects Model
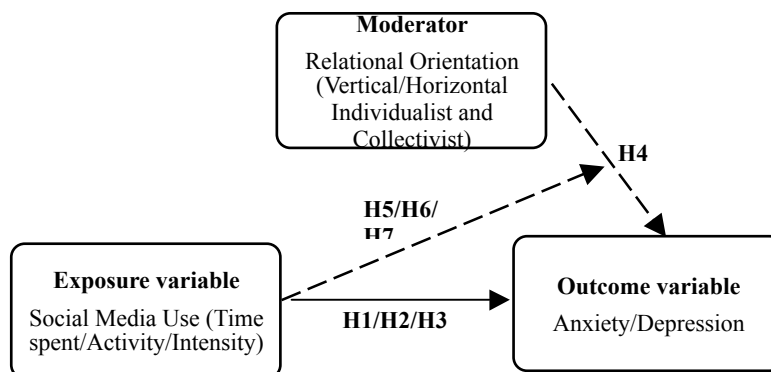


### 2.1.3 Setting

Participants will be selected from the UK and Turkey in order to increase the possibility of identifying a representative individualist and collectivist samples.

### 2.2.4 Sampling frame, sample and sample size

**Schools sample**

There are five types of target schools in the UK: Faith school, free school, academy, private school and city technology college whereas in Turkey, there are four types of target schools including Anatolian high school (refers to a public school in Turkey that admit their students according to their test scores in a nationwide exam), vocational and technical Anatolian school, Imam Hatip (faith school), and private school. Schools in a selected city in the UK and in Turkey will be stratified by type of school and one school will be randomly selected from each stratum. The researcher will then randomly sample two classes from each Year group (Years 9 & 10) in each selected school in Turkey. All adolescents from each selected class will be surveyed. For the UK, since the number of students in each school are much smaller than in Turkey, all students in Year 10 and 11 will be surveyed to ensure the sample sizes in both cities are equivalent.

**Table 1**. Eligibility criteria for school population.

| Classification | Target School | Excluded School |
|---|---|---|
| **Type** | Secondary/High schools that provide education to 14-16-year olds | Special schools (e.g. school for physical or intellectual disabilities) |
| **Authority** | State-funded and private | Not applicable |

**Participants and sample size**

A sample of 136 would be able to test for an $R^2$ change of 5% under most circumstances (i.e. an improvement in model fit from $R^2 = 0.10$ to $0.15$) with power of 80% at the 5% level of significance after the addition of a single independent variable. However, considering that there might be some missing data, we are planning to recruit around 200 subjects from each country. Therefore, this study involves primary data collection from around 200 high school students aged 14-16 in the UK and around 200 high school students aged 14-16 in Turkey. Table 2 shows the participant inclusion and exclusion criteria with reasons.

**Table 2.** Participant eligibility criteria.

| Eligibility Criteria | Reason(s) |
|---|---|
| *Inclusion Criteria* | |
| **Adolescents aged between 14 and 16** | 1. Young people aged 13-17 are the most enthusiastic users of social media (Allen et al., 2014). <br> 2. The period between 14 and 16 years considered as middle adolescence (Barrett, 1996; Curtis, 2015). During this period, peer relationships gain more importance than family relationships and peer influences reach a peak point (Gavin and Furman, 1989; APA, 2002). Mid-adolescents take their peers as a reference and give importance to peer feedback for goal setting (Brown et al., 2017). <br> *3.* Mid-adolescents begin to take a non-parental role model for themselves to evaluate their own attitudes, behaviours and thinking (Hurd et al., 2009). Adolescents can easily access other social media users' (e.g. famous people, social media influencers, strangers) profiles and their activities with one click. Adolescents may take these people as a role model and set unrealistic goals, which may influence their mental health in a negative way once they fail to achieve these goals. |
| **Parent Assent for adolescents under 16 years in the UK and adolescents under 18 years in Turkey. young people aged 11-16 years** | Participants under 16 years of age in the UK and under 18 years of age in Turkey are legally required to provide parental consent. |
| *Exclusion Criteria* | |
| **Those who wish not to take part in the study** | Participation is voluntary, thus, participants who wish to withdraw from the study will be excluded. |
| **Adolescents deemed not to have the capacity to consent** | Participants must be able to understand the nature and purpose of the study as well as they should be able to discuss their decision with others and decide whether they wish to participate or not. |

### 2.2.5 Procedure

Schools both in the UK and in Turkey will be approached in Autumn 2019 until Spring 2020. The researcher will provide the study packs to each Head Teacher for distribution. Each study pack will consist of Participant Information Sheets (PIS), and consent forms for both participants and their parents/guardians, and one returned envelope for the completed consent forms. The responsible teacher/year head will distribute the study packs to their pupils and briefly discuss what is involved if they wish to take part so that they can discuss this study with their parents/guardians at home.

Once the participants' parents and guardians have read through the PIS and provide their consent, the researcher will visit the schools on a pre-determined date and time to distribute the questionnaire booklet to students who have provided consent (and if needed, also have their parent/guardian's consent) with the assistance of the responsible teacher/year head. Participants will then be asked to complete the questionnaire booklet for this study in a regular classroom during a single class period during the school day and hand in the completed questionnaires to the researcher.

### 2.2.6 Measures

The questionnaire will consist of three measures and questions related to socio-demographic characteristics and social media use.

***Socio-demographic information***

Participants will be asked questions about their age, gender, country of origin, the type of school they are currently registered in, the number of siblings, parents' educational level and occupation.

***Social media-related questions***

Participants will be surveyed using a questionnaire consisting of a combination of closed and opened-ended questions enquiring about their internet access and social media use. They will be asked questions about whether they have access to the internet, own a smartphone, their most used social media platform (including membership duration), average time spent on social media during weekdays and weekends, the number and the type of friends/followers they have on social media and the intensity of social media use.

***Individualism and Collectivism Scale* (INDCOL)**

This is a 16-item scale developed by Triandis and Gelfland (1998) to measure individuals' cultural orientations. The scale is divided into four subgroups each of which involves 4 items. These subgroups are called 'Vertical Collectivism' (example item: "It is my duty to take care of my family, even when 1 have to sacrifice what I want"), 'Vertical Individualism' (e.g. "Winning is everything"), 'Horizontal Collectivism' (e.g. "I feel good when I cooperate with others.") and 'Horizontal Individualism' (e.g. "I often do "my own thing."). Items are answered on a 9-point scale, ranging from 1= strongly disagree and 9 = strongly agree. Cronbach's Alpha scores for HI, VI, HC and VC are 0.81, 0.82, 0.80 and 0.73 respectively. The scale was translated and validated in Turkish language by Ozbek (2010).

***The Patient Health Questionnaire-9 (PHQ-9)***

PHQ-9 is a 9-item scale developed by Kroenke, Spitzer and Williams (2001) and used as a self-administered tool to measure depression in either clinical or non-clinical settings (Cronbach's Alpha= 0.89). All items are answered on a 4-point scale (ranging from "0" = not at all and "3" = nearly every day). Total scores of 5, 10, 15 and 20 refers to having mild, moderate, moderately severe and severe depression respectively (Kroenke et al., 2001). The scale was translated and validated in Turkish by Sari et al. (2016). Turkish version of the PHQ-9 was also found quite reliable with a Cronbach Alpha score of 0.84.

***The Generalised Anxiety Disorder (GAD-7)***

GAD-7 is a self-report 7-item scale developed by Spitzer, Kroenke, Williams, and Löwe (2006). It is a valid and reliable tool (Cronbach's alpha= 0.79–0.91) used to measure the severity of generalized anxiety disorder either in research or clinical settings. All items are answered on a 4-point scale (ranging from "0" = not at all and "3" = nearly every day). Total

scores of 5, 10 and 15 refer to having mild, moderate and severe anxiety respectively. The scale was translated and validated in Turkish by Konkan, Senormanci, Guclu, Aydin, and Sungur (2013). Turkish version of GAD-7 was found reliable with Cronbach Alpha score of 0.85.

### 2.2.7 Planned statistical analysis

The PHQ-9 and GAD-7 scale scores will be calculated for each individual and used as continuous measures. The distribution of GAD-7/PHQ-9scores will be examined graphically (e.g. histogram, Box plot) to ascertain whether they conform to normality. If they do, then a general mixed linear model will be fitted to the data and if not, consideration will be given to transforming the data or using the Bootstrap procedure (repeated analysis by resampling from the data). Weighting that reflects the sample design will also be used in the analysis. Confounding variables including age, gender, place (the UK-Turkey) and the type of school will also be included in the model.

### 2.2.8 Ethical considerations

#### *Confidentiality*

Participants' personal information and their identity will remain confidential unless a participant is at risk of harm. Researchers will make explicit with participants and their parents in the research information leaflet and consent forms that the researcher will breach confidentiality if there is a disclosure related to serious harm and/or other protection concerns.

### 2.3 Phase II: Qualitative Study

### 2.3.1 Aims and objectives

The qualitative study aims to describe and explain how and why adolescents with different cultural orientation use social media, and the role of social media in the development and maintenance of mental well-being.

Objectives of the study are: (1) to explore the motivations of adolescents for using social media and their online behaviours, (2) to understand how social media influence their mental health, and (3) to compare similarities and differences between clinical and non-clinical adolescents in terms of their motives for using social media, online behaviours and mental wellbeing.

### 2.3.2 Design

An Interpretative phenomenological analysis (IPA) will be used in this qualitative study. IPA is used to understand the lived experiences of individuals about a phenomenon (Smith, Flowers, & Larkin, 2009; Creswell, Hanson, Clark-Plano, & Morales, 2007). For this study, individualism-collectivism, social media use and its psychological impacts are the phenomena of interest. Through IPA, we will seek to understand and interpret individualist and collectivist adolescents' lived emotional experiences on social media in relation to their motivations for using social media and their online behaviours; and to explore how adolescents make sense of these lived experiences.

### 2.3.3 Setting

Interviews will be arranged at a mutually convenient time and place (in CAMHS clinic or at home). In order to ensure confidentiality and each interviewee's comfort, the interviewer

(BK), an interviewee and if needed, the interviewee's parent(s) will be present in the interview setting.

### 2.3.4 Participants

A clinical and non-clinical population will be selected for this qualitative phase. The clinical sample of adolescents will be recruited from a population currently receiving care from Child and Adolescent Mental Health Service (CAMHS) across England or UK and the non-clinical population will be recruited from schools in England or UK. Cities like London and Manchester are the most culturally diverse cities around the UK so by selecting participants from these cities will increase the chance of identifying a sample of adolescents from different cultural backgrounds. The inclusion and exclusion criteria for interview sample are detailed in Table 3.

**Table 3.** Participant eligibility criteria.

| Eligibility Criteria |
| --- |
| ***Inclusion Criteria*** |
| Adolescents aged 14-16 from schools or CAMHS |
| For clinical samples, adolescents aged 14-16 years with confirmed diagnosis of mental ill-health (i.e. emotional disorders) according to DSM-5 or ICD-10/11 and receiving support from CAMHS |
| Adolescents who are active and engaging with social media |
| Capacity to provide informed consent along with parent consent |
| |
| ***Exclusion Criteria*** |
| Participants who indicate to |
| PI or clinicians within CAMHS that they do not want to participate |
| Not able to provide informed consent determined at recruitment |
| Adolescents who had a suicide attempt within the past month at time of recruitment determined by self-report |

### 2.3.5 Sampling and sample size

IPA seeks to produce a thicker and richer data collected from a more specific group for whom the research question is more relevant (Smith et al., 2009). For the current study, participants will be purposefully selected through maximum variation sampling fulfilling the inclusion criteria for interview sample. IPA studies are conducted on small samples and there is no rule for the sample size though usually around five to six participations are considered sufficient. However, this study will involve interviewing between ten to twelve adolescents aged 14-16 in the UK.

**Figure 3.** Sampling frame for the interview sample.
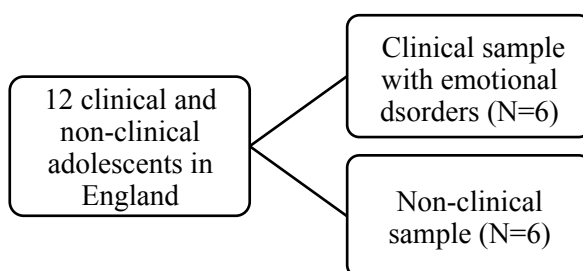
### 2.3.6  Procedure and interview topic guide

Once permission has been received from the CAMHS workers/school head teachers and potential participants have been identified, a Participant Information Sheet (PIS) will be sent to these participants explaining the purposes of the research and what would be involved if they decide to participate. The PIS will contain a tear-off slip for them to complete and either return in prepaid post envelope or to email the study researcher directly if they wish to participate.

Prior to any interview taking place participants will be asked to sign a consent form and complete a demographic form. For those under the age of 16, a consent form will be signed by the participant and by their legal guardian.

All interviews will be carried out either in the participant's home, clinic or at a convenient place for the participant whichever participants feel more comfortable with. Adolescents will be given the option of an adult being present when the interview takes place. A semi-structured interview will be conducted in order to analyse how participants make sense of their lived experiences in sufficient depth. In the interview, participants will be asked questions related to social media use, mental health and their cultural orientation. Each interview will take up to an hour and will be audio-recorded with permission of interviewees.

### 2.3.7  Data analysis

The interviews will be transcribed verbatim by the doctoral researcher (BK) and will be checked and validated by three researchers (ML, GT and AG), who are native English speakers, who will listen to the recordings a second time.  Data will then be analysed using Interpretative Phenomenological Analysis (IPA) in order to explore how adolescents make sense of their experiences on social media. The data will be coded systematically by using the following steps in Figure 4, set out by Smith and Osborn (2003).

**Figure 4.**  Data analysis flowchart (Smith and Osborn, 2003).
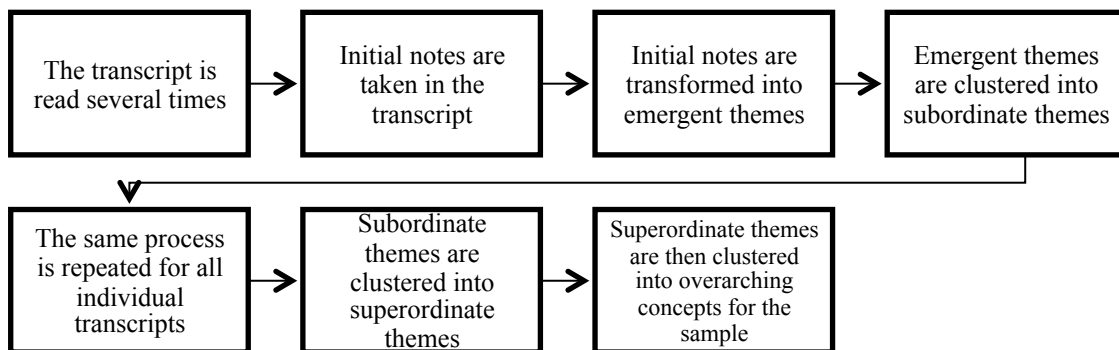


### 2.3.8  Ethical considerations

Participants will be informed that their participation is entirely voluntary, and that they can end the interview at any time for whatever reason. They will also be reassured that their information will be kept as strictly confidential. Participants will be given opportunity to talk about their feelings or concerns about the study in the end of the interview. The interviewer (BK) will be supervised by two qualified professionals who all have clinical experience in working with adolescents with mental health disorder. The interviewer will also liaise regularly with supervisors to discuss and address difficulties that should arise.

## 3. Anticipated Results

The quantitative findings from phase I are expected to show that relational orientation partly or completely moderates the relationship between social media use and mental health outcomes in adolescents. This means that the observed relationship would differ for individualist and collectivist adolescents and the effects of social media are expected to be stronger for collectivist adolescents compared to individualist adolescents.

## 4. Discussion

This study will provide further insights into the relationships between the time spent on social media and mental health outcomes, such as anxiety and depression as well as between activities (e.g. the number of friends on social media, the type of people they have and follow on social media, duration of membership) and mental health outcomes. In particular, the role of relational orientation in the proposed relationship has not been explored in adolescents before. Quantitative findings in which a non-clinical population has been targeted will be further explored in a clinical and a non-clinical sample through using qualitative approach.

The results of this study may not be generalised to a larger population and samples selected from a city in the UK and Turkey may not be representative of whole population in the UK and Turkey. However, this study and its findings may inform and lead future comparative studies of individualist and collectivist countries. This study will help clinicians, researchers and policy makers understand the effect of relational orientation on the relationship between social media use and mental health in adolescents.

## 5. Conclusion

This study is designed to investigate whether relational orientation moderates the relationship between social media use and mental health in adolescents. If so, it will further explore why and how individualist and collectivist adolescents use social media and what meaning(s) they give to their emotional experiences on social media in relation to their motives for using social media and their online behaviours. The findings of this study may help explain the complexity and the inconsistencies in the relevant literature and increase the awareness of cultural differences in the relevant research field and in practice.

## Declarations

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