Lost Connections: The Economic and Social Impacts of Early-Life Mental Health

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Abstract

We investigate the long-term effects of early life mental health—specifically anxiety and depression—on multifaceted outcomes: economic status, social connectedness, and life satisfaction in young adults. Utilizing unique longitudinal data collected in Kasur, Pakistan, we find that past anxiety, but not past depression, predicts current social connectedness and overall life satisfaction while economic status remains unaffected. This aligns with a "standardized" life course framework where youth trajectories regarding economic status may follow a predetermined course. We support this framework by demonstrating that (i) economic status in our data is indeed very standard, mirroring the distribution of economic status in Pakistan Social and Living Standards Measurement (PSLM) data; (ii) parents are the primary decision makers as parental characteristics drive economic outcomes more than youth traits; and (iii) young adults have limited autonomy, likely in households with high parental authority that suppresses the influence of mental health. The strong association of past anxiety with social connectedness and overall life satisfaction during young adulthood informs policymakers in supporting interventions that would break cycles of isolation.

Keywords: Mental Health, Social Connectedness, Wellbeing, Cognitive Function, Standardization.
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1 Introduction

The mental health problem during childhood-to-adolescent transition represents a critical public health challenge, with recent global estimates suggesting that one in four adolescents have experienced mental health issues at some stage of their development (Racine et al., 2021). The implications of poor adolescent mental health on long-term economic wellbeing are far-reaching, with evidence linking poor mental health in adolescence to worse economic outcomes in adulthood, such as lower educational attainment, weaker labor market performance, and reduced prospects on the marriage market (Currie et al., 2010; Goodman et al., 2011; Smith et al., 2010; Fletcher, 2014; Biasi et al., 2021). Furthermore, existing research highlights that social connections can impact many of these economic outcomes (Granovetter, 2005; Jackson, 2014; Bailey et al., 2018b). However, the role of adolescent mental health in shaping social connections remains underexplored (Sakellariou, 2023), even though social isolation can itself exacerbate adverse economic outcomes.

The existing literature has predominantly focused on high-income countries and economic outcomes, leaving a significant gap in understanding the lifelong and multifaceted impacts of adolescent mental health in low- and middle-income countries (LMICs). The gap is primarily driven by data limitations, which have constrained empirical investigation in these settings, where the burden of mental health challenges and their economic implications may differ substantially from high-income contexts. In this paper, we leverage a unique data collection effort following children in Kasur, Pakistan, from 2018-2024, capturing their two key developmental phases: as they transitioned from childhood to adolescence (in 2021) and then from adolescence to young adulthood (in 2024). We study the legacies of poor mental health during the childhood-to-adolescence transition on economic and social outcomes during their early adulthood. We provide several contributions to the literature in the LMICs context.

First, we follow these young adults longitudinally across six years, tracking their mental health — measured by standardized screening tools designed to identify individuals at risk of anxiety and depression — at two critical developmental phases. These data enable us to analyze how past mental health shapes critical milestones relating to school, work, or the transition into married life and social life. Second, our longitudinal data collection captures the COVID-19 period, shedding light on one of the most consequential global stressors adolescents have ever experienced, at least in terms of social isolation and missed opportunities for social bonding, gathering, and community learning. While the focus of the study goes beyond COVID-19, we exploit the COVID timeframe as a unique window into the study of critical mental health stressors – a "worst-case" scenario.

Third, we measure the implications of mental health in broad terms, ranging from purely eco-

nomic and status-related, such as education, work, and marital status, to social and emotional connections and broader life satisfaction. In so doing, the study frames early-life mental health as a crucial determinant of social skills, which has not been the primary focus of the past literature. Lastly, we take the long-term perspective by estimating the impact of lagged mental health measures while accounting for current mental health. This allows us to contribute to the debate on persistent (vs fading) legacies of mental health over the life-cycle (McLeod and Kaiser, 2004; Layard, 2013; Mulraney et al., 2021).

The context of this study is Pakistan, which is particularly well suited for exploring our question. Pakistan is a lower-middle-income country with the world's fifth-highest population, and its demographic profile makes it highly relevant for this study. With a young population – nearly 64% of the population below age 30 – and a growing youth bulge that will constitute the productive workforce of the future (UNFPA, 2022), exploring the prevalence and implications of growing mental health concerns among a rising youth is fundamental to enable the country to reap benefits from this demographic dividend.

Furthermore, while the country has made significant strides in terms of poverty reduction over the past half-century, recent shocks (such as COVID-19, the 2022 floods, recent climate vulnerabilities, and economic and political volatility) have reversed this progress (UN, 2024). This may have implications for mental health dynamics, as vulnerabilities and mental health go hand in hand, with economic, political, and environmental stressors serving as key determinants of poor mental health (McLeod and Shanahan, 1996; Rohde et al., 2017; Larsen et al., 2023). While findings from this study cannot generalize to all LMICs, evidence from Pakistan exemplifies the daily realities of adolescents and young adults in many LMICs currently experiencing similar demographic profiles (e.g., young population structures) and challenges (e.g., volatile economies, hardship, weak infrastructure).

Unlike findings from high-income countries (Currie et al., 2010; Goodman et al., 2011; Smith et al., 2010; Fletcher, 2014; Biasi et al., 2021), we find that past mental health, measured by either anxiety or depression, has virtually no effect on current economic status once current anxiety is accounted for. Conversely, we document a strong and significant negative relationship between past anxiety (but not past depression) and current social connectedness. Overall welfare – measured by life satisfaction – is also negatively related to past anxiety but not related to past depression. These findings point to the long-lasting (persistent) detrimental effects of adolescents' anxiety disorders on social networks and overall wellbeing.

The finding that past anxiety emerged as a stable predictor of social connectedness and life satisfaction is interesting. However, it is not surprising in light of both the biological and contextual factors: anxiety disorders typically onset earlier in life than depression (Cartwright-Hatton et al., 2006), intensifying during adolescence due to maturational and environmental influences

(Cohen et al., 2018; De la Torre-Luque et al., 2020). Cultural nuances also shape these dynamics. As documented by the qualitative study of Haqqani et al. (2024), Pakistani youth perceive anxiety as future-oriented worry. In contrast, depression is linked to past trauma and manifests gradually. Lastly, the COVID-19 pandemic particularly heightened anxiety through uncertainty and disruption. In sum, the distinct findings for anxiety and depression underscore the need for further longitudinal research to gain a deeper understanding of the temporal onset and long-term progression of anxiety and depression in our participants.

The finding that the past mental health of young adults does not influence their economic status aligns with the idea that economic trajectories in LMICs like Pakistan are shaped in large part by parental authority, cultural norms, and other external factors leading to a standardization of life courses (Brückner and Mayer, 2005; Pesando et al., 2021). Individuals in this context are expected to follow a series of socially accepted sequences of life events and transitions. This implies that in most LMICs, young adults' agency may be limited to minor decisions such as religious engagement or personal beliefs, health and diet, and effort level in academics and work tasks. Still, they may be unable to influence significant milestones. We conducted three analyses to explore whether this theory explains our results.

The first analysis is a descriptive exploration to determine whether the proportion of individuals in work, education, and marriage status aligns with what one would expect in the general population. Using data from the Pakistan Social and Living Standards Measurement (PSLM 2020), we identify these statuses for individuals aged 16-20 (the same age range as our young adults). Interestingly, we see a similar distribution across these milestones, except for marriage, where our sample shows a slightly lower percentage of married individuals. This exploration suggests that these young adults' activities and economic statuses largely reflect the standard trends observed in the large-scale population in Pakistan, aligning with expected norms for their age group.

In the second exercise, we conduct a Shapley decomposition to decompose the R-squared value in our estimation model (with dependent variables as either one of the economic statuses, social connectedness, or life satisfaction) and assess the contribution of each independent variable to the model. We categorize the independent variables into three groups: parental characteristics, young adults' characteristics, and household characteristics. Within young adults' characteristics, we further isolate the effects of past anxiety, past depression, and current anxiety. Our findings reveal that parental characteristics play a significant role in determining economic status but not so much in social connectedness and life satisfaction relative to young adults' characteristics. These results provide suggestive evidence of the primary agents driving decision-making for the important milestones.

Finally, in the third exercise, we utilize a cultural norm of power distance – a cultural norm emphasizing hierarchy – whether based on authority or age, which places significant importance

on deference to those in higher positions (Hofstede, 1980). Individuals in higher social ranks should maintain social distance, avoid seeking opinions from lower-ranking individuals, make authoritative decisions, discourage questioning from subordinates, and withhold responsibilities from lower-ranking individuals. Using the parents' views about these norms, which we collected in 2018 when our young adults were children, we consider parents who score high on the composite index of these norms as not giving autonomy to their children, restricting their agency. We find that mental health measures of young adults with high power distance parents have no discernible impact. In contrast, the significance of results is driven by young adults whose parents scored lower on power distance norms. We interpret this as evidence that children under parental control follow predetermined, standardized trajectories. This is not to suggest that parental control could serve as a solution for mitigating the adverse effects of poor mental health, as overall life satisfaction among young adults remains negatively impacted by anxiety, regardless of the power distance norm.

Our findings on the lasting adverse effects of poor adolescent mental health on social connectedness in young adulthood are particularly significant from a long-term perspective. Growing evidence highlights the critical role of social networks in adulthood in shaping economic outcomes (Granovetter, 2005; Jackson, 2014; Bailey et al., 2018b). This is especially pertinent in LMICs, where informal social ties often substitute for formal institutions, serving as critical social protection buffers against economic shocks such as job loss or health crises (Banerjee and Duflo, 2007; Chuang and Schechter, 2015) and play an important role in facilitating credit arrangements when enforcement of debt contracts is challenging (Besley and Coate, 1995; Bryan et al., 2015; Breza and Chandrasekhar, 2019).

Our findings may inform policymakers looking to design strategies to support children's mental health from an early age, enabling them to break cycles of disadvantage and isolation that may prove heavily consequential in adulthood. Academic institutions are well positioned to implement preventive mental health strategies and school-based mental health programs or desk-assignment interventions (Bhargava, 2024) can be a relatively cost-effective intervention to address the early roots and consequences of anxiety and depression in adolescents before they exacerbate further (Das et al., 2016; Fazel et al., 2014; O'Reilly et al., 2018).

In Section 2, we outline the context of this study, and in Section 3, we review relevant literature from economics, psychology, and sociology on youth mental health and its relationship to economic outcomes and social integration. Section 4 describes the data used in this study, including the construction of variables for analysis. In Section 5, we present our findings and provide evidence on the standardization of the life course in Section 6. We conclude in Section 7.

2 Background

The Pakistan context: Social norms and the "standardization" of the life course. Pakistan is a patriarchal society characterized by a patrilineal family system (Agha, 2016) with strong adherence to traditional social and gender norms (Zulfiqar and Kuskoff, 2024). These norms sustain a hierarchy of power dictating behaviors and structuring opportunities available to individuals (Ahmed and Hyndman-Rizk, 2020). Power dynamics are themselves embedded within institutions and cultural practices, shaping the very fabric of Pakistani society, including the way families, communities, and broader kinship systems organize their lives, as well as the way individuals and youth can operate (Agha, 2022). Pakistani society is also characterized by a cultural orientation and value system emphasizing ways of being and behaviors that promote group harmony and social bonding (Lloyd and Grant, 2005). When combined with a patriarchal ideology, this results in an unequal power structure not only affording men more power and freedom relative to women (e.g., in terms of mobility restrictions and decision-making power dynamics), but also creating a "vertical" age hierarchy whereby the elderly exert strong pressures on downward generations, significantly influencing their daily lives and routines (Kerai et al., 2024). This is typical South Asian "joint" family systems where multiple generations often live together and the elderly, holders of strong foundations of morals and values, are looked upon as primary source of guidance and inspiration in any family matter (Qidwai et al., 2017).

The role of parental authority is pervasive in the way young people approach and navigate adult roles and decisions related to marriage, education, and employment, particularly for women (Zulfiqar and Kuskoff, 2024), resulting in a sequencing of life events that rarely deviates from the "norm" nor can be fully shaped by individual agency. Most Pakistani marriages are arranged and brokered by family elders (Khurshid, 2020). As nuclear family households are gradually becoming more common in urban Pakistan, young adults are increasingly choosing whom they marry, yet it is often necessary to receive parents' full approval and consent on their choice of partner, resulting in a jointly negotiated process (Maqsood, 2021). Similarly, two of the most important life-course transitions, first sexual intercourse and first marriage, tend to coincide or occur at very close ages, and marriage marks the onset of the socially acceptable time for childbearing (Rasul et al., 2022), thus creating little variation in life sequences tied to union formation, marriage, and childbearing (Underwood et al., 2023; Pesando et al., 2021).

Youth mental health and COVID-19 disruptions in Pakistan. Mental health challenges contribute significantly to the burden of disease among adolescents and young adults, with 10-20% of young people globally affected by these issues (Racine et al., 2021). The burden of mental health issues shows varying patterns. The higher prevalence is at times observed among females

and those from higher-income backgrounds (Madigan et al., 2023), while individuals in LMICs and those from lower-income backgrounds experience greater mental health challenges in other studies (Branje, 2023).

Globally, the mental health of young people has worsened over recent decades (Racine et al., 2021), with the COVID-19 pandemic exacerbating this decline by impacting adolescent mental health and peer relationships worldwide. While some studies indicate that mental health problems stabilized or declined post-pandemic (Landi et al., 2022), long-term effects remain uncertain due to limited longitudinal research (Branje, 2023), casting doubts on the "durability" of these impacts in the longer term.

LMICs, where most of the world's youth reside, face unique barriers. Limited mental health resources, inadequate care, and a lack of culturally relevant treatments — or lack of treatments altogether — exacerbate the issue (Kieling et al., 2011). However, mental health issues in low-and-middle income countries are also prevalent. Research in Pakistan found 17.2% of adolescents in Rawalpindi were identified as probable cases of depression, with poor economic status and adverse life events linked to these conditions (Khalid et al., 2019). Related estimates from a convenience sample of youth in Karachi reported a prevalence of socio-emotional problems between 19% and 34% (Syed et al., 2007). Despite this, less than 1% of the healthcare budget is allocated to mental health, with only one in-patient child and adolescent psychiatric unit in the public sector (Imran et al., 2021). Child and adolescent psychiatry/psychology training programs are in their infancy, and less than 10 qualified child and adolescent psychiatrists exist in a nation of over 240 million people (Hamdani et al., 2021). As a consequence, most child and adolescent mental health problems are dealt with in adult mental healthcare facilities, usually located in urban centers and close to a saturation point (Hamdani et al., 2021).

Growing scholarship, albeit mostly cross-sectional, has addressed the mental health implications of the COVID-19 pandemic among youth in Pakistan. For instance, the study by Imran et al. (2022) documented significant impacts of COVID-19 on almost all dimensions of adolescents' lives, but particularly so on education and the quality of social connections. Over 60% of respondents reported changes in responsibilities at home including increased time spent in helping family members, and over 50% reported decreased quality of home life, conflicts with parents and family members, and limited privacy. Male and older adolescents appeared to be more adversely affected (Malik et al., 2022), especially in terms of lost social connections, a reasonable finding in a male-dominant society where males have more freedom to go out and fewer responsibilities at home (i.e., they have more to lose). Not least, having past psychiatric history was found to increase respondents' vulnerability to emotional health problems during the pandemic, consistent with global evidence (Hostinar and Velez, 2024).

3 Literature

The relevance of early-life mental health for economic outcomes. A substantial body of research highlights the significant impacts of early-life mental health on future economic outcomes in high-income countries. Studies have shown, *inter alia*, that poor early-life mental health increases the likelihood of welfare dependence in Canada (Currie et al., 2010), reduces income in the UK (Goodman et al., 2011), and adversely affects labor market outcomes and income in the United States (Smith et al., 2010; Fletcher, 2014) and Denmark (Biasi et al., 2021).

More broadly, concepts related to mental health have been included under the umbrella term noncognitive skills in important work initiated by Heckman and Rubinstein (2001), who emphasized that people with similar cognitive skill levels can have vastly different outcomes based on noncognitive factors. This argument was further developed by Heckman et al. (2006), who showed that measures of noncognitive skills predict education, earnings, and risky behaviors (see also, e.g., Borghans et al., 2008; Deming, 2017; Attanasio et al., 2020; Edin et al., 2022). This growing emphasis on the effects of noncognitive skills on economic outcomes further underscores the potential long-term implications of childhood mental health conditions.

Reduced labor supply and lower likelihood of marriage are key mechanisms linking early-life mental health to diminished future income. Additionally, poor mental health in early life can hinder educational attainment, reducing the accumulation of human capital and negatively influencing labor market outcomes in adulthood (Currie, 2024). However, existing research has focused mainly on high-income countries. LMICs, characterized by more informal, low-wage, and low-skill labor markets, under-resourced education systems, and different cultural norms around marriage, present a distinct context (see, e.g., Fields, 2011). The extent to which findings from high-income countries apply to low-income settings remains an open question, and one that sets an important stage for the current study.

The relevance of early-life mental health for social capital. The relationship between mental health and socio-emotional outcomes such as social connectedness, social integration, and life satisfaction is complicated by its bidirectionality (Yu et al., 2015). From a sociological and developmental perspective, social integration promotes mental health and health in general, as individuals with less social connections exhibit more psychological problems (Berkman et al., 2000). This is confirmed by a wide range of studies. For instance, a meta-analysis by Gorrese (2016) found that adolescents experiencing depression or social anxiety often face challenges in their close friendships. Depressive symptoms can lead to negative perceptions of themselves and others, making it harder for adolescents to recognize, seek, or benefit from social support while increasing their sensitivity to peer rejection. Additionally, these negative beliefs may provoke less

supportive or more rejecting behaviors from peers, further contributing to interpersonal difficulties over time. Secure peer attachments can help mitigate stress and anxiety, offering resources to navigate challenges and manage negative emotions effectively. Ragelienė (2016) went a step further claiming that peer relationships in adolescence complement but increasingly exceed the importance of parental relationships during this stage of life, as peer acceptance serves as one of the strongest protective factors against anxiety and depression, in line with Barber and Schluterman (2008).

A recent study acknowledging the complex bidirectionality of the relationship between mental health and social connectedness found that, contrary to most existing literature, the most prominent effect flows from mental health to social connectedness, rather than the opposite (Sakellariou, 2023) — thus providing solid foundations for our investigation. The intuition for the importance of adolescent mental health in maintaining and fostering social ties is that adolescents with mental health symptoms may progressively become socially isolated because of negative experiences when interacting with others, as well as negative reactions of others. Mental health can also affect how social and community situations are perceived which may, in turn, affect one's sense of belonging and ultimate behavior. The policy relevance of the study, therefore, lies in identifying and treating mental health symptoms as a primary intervention and precursor to improving youth social connectedness.

The importance of social ties and social connections for future life outcomes. The influence of social ties and connections on future life outcomes is extensively documented across disciplines. Strong social networks provide individuals with access to vital resources, including information, career opportunities, and consumption pathways, all of which significantly improve well-being and life satisfaction (Granovetter, 2005; Jackson, 2014; Bailey et al., 2018b). Studies indicate that social ties impact a diverse set of individual economic behaviors from job search (e.g. Holzer, 1987, 1988; Montgomery, 1991; Brown et al., 2016), house purchasing decisions (Bailey et al., 2018a), financial decision making (e.g. Duflo and Saez, 2002, 2003; Arrondel et al., 2022), lifestyle choices (Carrell et al., 2011), to willingness to contribute to public goods (van Dijk et al., 2002). At a more aggregate level, work also shows the importance of social networks on trade (Bailey et al., 2021), economic mobility (Chetty et al., 2022), income growth (Burchardi and Hassan, 2013), innovation (Jaffe et al., 1993), and productivity (Ahlfeldt et al., 2015), further highlighting the crucial role social ties play in economic outcomes.

A related interdisciplinary literature on education discusses how the strength of social networks matters from a very early age and how academic settings may contribute to fostering social capital that plays a fundamental role in later-life outcomes. In schools, well-connected students perform better both academically and socio-emotionally, while more isolated students struggle

more (Hall-Lande et al., 2007). Social capital developed in childhood shapes social skills, aspirations, and achievements, ultimately affecting labor-market outcomes (Deming and Silliman, 2024). In light of this, policymakers strive to enhance student connectedness through strategic social interventions such as targeted teachers' programs addressing social isolation or selectively pairing isolated students with more popular peers through deskmate assignments (Alan et al., 2024). Our hope with this study is to characterize mental health support as another — often neglected — policy lever to enhance youth social connectedness.

In LMICs, the role of social ties extends even further, serving as critical buffers against economic shocks such as job loss or health crises. Social networks in these contexts often function as informal safety nets, providing essential support to individuals and families during periods of financial instability or adversity (Banerjee and Duflo, 2007; Chuang and Schechter, 2015). This capacity to absorb and mitigate external shocks underscores the importance of strong interpersonal connections in resource-constrained settings where formal social protection mechanisms are limited. Moreover, the lack of formal institutions guaranteeing loan repayments can give rise to an important function of social networks in facilitating access to credit (Besley and Coate, 1995; Bryan et al., 2015; Breza and Chandrasekhar, 2019). Social connectedness is, therefore, increasingly acknowledged as a crucial factor influencing life outcomes, especially in LMICs.

4 Data

Original Sample. The panel for this study was initially recruited in 2018 from Kasur, Pakistan. The district of Kasur was selected for sampling, as it matches the broader Punjab province across numerous development indicators; as per data from the Alif Ailaan campaign for education in Pakistan from 2013-2018 (Alif Ailaan: Education Survey, 2016). It includes district-wise data on school dropout rate, monthly income, population involved in agriculture, youth labor market participation, and crime. Using public school administrative data,[1] 32 schools were randomly selected from a list of 45. Limiting our sample to students in their final year of primary school (median age of 12), we contacted parents to participate in our survey about themselves and their children. We use the data from this first wave (April-June 2018) to serve as baseline indicators.[2]

Follow-up Samples. Using the initial survey as a baseline sample, the same parents were re-contacted to complete four follow-up surveys. The first follow-up, wave 2, took place during the first nationally instituted lockdown of schools to mitigate the spread of COVID-19 from March

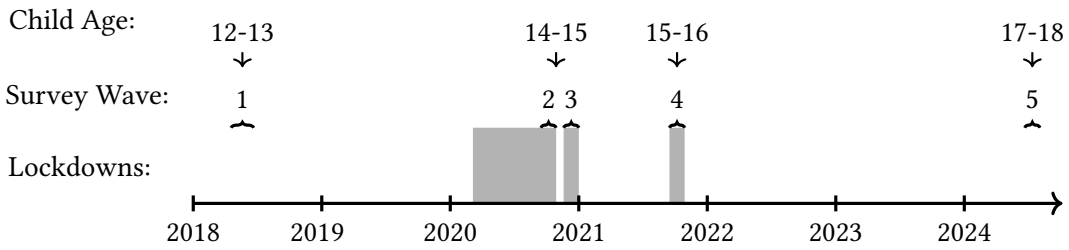
[1]We utilized the School Information System maintained by the Government of Punjab, accessible only within Pakistan: https://sis.pesrp.edu.pk/.

[2]This 2018 study was approved by the author's university IRB (protocol : 15-2018) and conducted in accordance with human subject guidelines (Malik and Mihm, 2022).

to September of 2020. Parents were contacted for this wave of data collection during August-September 2020. A second lockdown of schools occurred between November 25th, 2020, and December 25th, 2020, to control the spread of the virus, during which parents were contacted for a second follow-up (wave 3).

In 2021 we received IRB approval to collect information from child subjects over the phone. This allowed for the direct collection of information from both members of the parent-child pair, including self-reported mental health. During the fall of 2021, a third lockdown of schools was instituted due to COVID-19, during which families were contacted for another follow-up survey from September to October (wave 4). Three years after the last lockdown, we re-contacted households to collect data on final outcomes (wave 5) in September of 2024. Hence, we are able to capture panel data over six years, with the mean age of subjects going from 12 to 18 over the time period. We provide the timeline in Figure 1. Wave 5 survey is provided in Appendix B.[3]

Figure 1: Timeline



Notes: This figure lays out the order the order of events during the study period.

Attrition. The first wave surveyed parents of 1,417 students; by the follow-up waves (wave 2-wave 4), we had 975 students, and in the current wave 5, we were able to re-contact 800 of the 975 respondents, an 18% decrease. The main driver of attrition is due to changes in phone numbers.[4] However, follow-up waves did not introduce any systematic bias across socioeconomic variables used in our analysis, as demonstrated in Table A.1. The re-contacted subsample in wave 5 is remarkably similar to that of the previous waves (using their baseline characteristics), as p-values for differences in means across variables are largely insignificant.

[3]The follow-ups were approved by the author's university's IRB (protocol: HRPP-2020-98) and conducted in accordance with human subject guidelines. Previous surveys and the material reproduced in the Online Appendix can be accessed at: https://doi.org/10.1016/j.joep.2022.102549.

[4]In recent years, the Pakistan Telecommunications Authority (PTA) has increasingly mandated network providers to enhance their phone number ownership records to include citizens' national ID cards. This mandate has led to the cancellation of accounts that were not accompanied by the proper paperwork; those effected are unable to recover their phone number and have to replace them.

Summary. In 2018, 34% of fathers and 14.6% of mothers were literate, with average ages of 43 and 39, respectively. By 2024, fathers were 49 years old, and mothers were 45. The household head's Raven score was 21/60, while the child's average age was 12 in 2018 and 18 in 2024, with a Raven score of 17/35. The sample included 43% male individuals, and the average household income in 2018 was 12,000 PKR/month (approximately $170), translating to about $1 per person in a household with an average size of 7.

Next, we describe the construction of all the independent and dependent variables we use in our analysis.

4.1 Mental Health Indices

Anxiety Index. To create the first proxy measurement for child mental health, we administer a 15-point questionnaire for screening of Anxiety Disorder developed for a Pakistani context (Mumford et al., 2005). The test consists of 15 Yes/No questions leveraging local idioms and has been evaluated in clinical settings.[5] Using the response to each question, we construct the following index to measure anxiety:

$$Anxiety\ Index = \sum_{q=1}^{15} (\frac{R_q - \hat{\mu}_q}{\hat{\sigma}_q})/15 \tag{1}$$

This index is constructed using Kling et al. (2007). In particular, $Anxiety\ Index$, is computed using the sum of z-scores for each response R in the questionnaire, where q represents the question number. We derive the anxiety index (2021) during the last lockdown and the anxiety index (2024) during this wave. These are the periods where children were surveyed.[6]

Depression Index. For a secondary measure of mental health, Mumford et al. (2005) developed a similar questionnaire as a screening tool for Depression Disorder in Pakistan. It also comprises 15 Yes/No questions, allowing for creating a $Depression\ Index$ using the same equation 2 with responses corresponding to the depression instrument.[7] These questions were only asked of chil-

[5]The questions are provided in Appendix B. Module 5 and include: over the last two weeks, do you: (a) think that you have some mental problems, (b) feel anxious amongst a lot of people, (c) feel your mind is at peace, (d) worry over trivial things, (e) feel your tolerability decreased, (f) feel that one idea comes to your mind again and again, (g) feel lazy, (h) feel you lost your self-confidence, (i) feel your mind is not working, (j) get frightened, (k) feel your mind is not working, (l) feel you are punished for something, (m) sleep well at night, (n) keep on thinking without any purpose all the time, (o) feel you do not understand anything.

[6]In earlier waves conducted during the COVID period, children's well-being was assessed exclusively through surveys conducted with parents. The Government of Pakistan did not permit direct contact with children via phone.

[7]The depression index is based on the following questions. Are you: (a) happy these days, (b) excessively hopeless, (c) fed up with life (d) Has your interest decreased? Do you feel: (e) sad at heart, (f) like studying, (g) enjoy this world, (h) like staying in bed all day, (i) your food, (j) like crying, (k) fed up with your family members, (l) you have

dren during the last lockdown corresponding to wave 4, and we denote this index as Depression Index (2021).[8]

$$Depression\ Index = \sum_{q=1}^{15}(\frac{R_q - \hat{\mu}_q}{\hat{\sigma}_q})/15 \tag{2}$$

4.2 Outcome Variables

We analyze three outcomes: current status outcomes, social connectedness, and an overarching measure of life satisfaction.

4.2.1 Current Status

We collect information on individuals' current status to observe the economic effects of changes in mental health on key life activities.[9] In doing so, we create the following indicator variables:

- **Schooling Status:** Individuals currently enrolled in any educational institution are considered to be current students (=1), while those not enrolled are labeled as out of school (=0).
- **Working Status:** Those employed (full-time and part-time) or self-employed are given a currently working status (=1). All others, regardless of their job search status, are considered out of work (=0).
- **Marriage Status:** Those who are married and cohabit or have solemnized their Nikkah but have not yet begun their marital cohabitation or intimate life are given a married status (=1). All others are coded as 0.
- **Idle Status:** An idle status is assigned if individuals are out of school, do not work, and are unmarried (=1). All others are coded as 0.

COGTEL Index. It is equally essential to explore whether mental health is associated with the extensive margin of schooling status (e.g., enrollment or educational attainment) or the intensive margin (e.g., cognitive functioning). For the intensive margin, we utilize the Cognitive Telephone Screening Instrument (COGTEL), a telephone-based cognitive functioning instrument (Kliegel et al., 2007). It is a 6-part test that is designed for global use among younger and older adults. The

committed some serious sin, (m) running away from your home, Do you (n) have a wish to die, (o) ever think that death would be better than this life.

[8]To minimize survey duration, as it was conducted over the phone, we faced a trade-off between measuring anxiety and depression. We prioritized anxiety, as prior research (Cartwright-Hatton et al., 2006; Cohen et al., 2018; De la Torre-Luque et al., 2020) suggests it is more relevant for the age group in our sample.

[9]Appendix B., Modules 6, 7, and 8, contains the questions on economic status that we administered.

6 sub-tests cover prospective memory (0 or 1 point), verbal short-term and long-term memory (0–8 points each), working memory (0–12 points), verbal fluency (0 to unlimited – as many words as the participant can name within 1 min), and inductive reasoning (0–8 points).[10] The scores of the 6 sub-tests are then combined for a weighted total score as follows:

$$\begin{aligned} COGTEL &= (7.2 * Prospective\ Memory) + (1 * Verbal\ Short\ Term\ Memory) \\ &+ (0.9 * Verbal\ Long\ Term\ Memory) + (0.8 * Working\ Memory) \\ &+ (0.2 * Verbal\ Fluency) + (1.7 * Inductive\ Reasoning\ Score) \end{aligned} \tag{3}$$

4.2.2 Social connectedness

Berkman Social Network Index. To quantify the potential impacts of mental health on individuals' social integration, we use the Berkman Social Network Index (BSNI), a metric designed to measure social isolation and loneliness (Schoenbach et al., 1986). It is derived from a 7-point questionnaire capturing marital status, sociability (S), participation in religious groups (R), and participation in other group activities (O). We modify the index calculation to exclude the marriage component due to low marriage rates in our sample.[11]

$$BSNI = 4(S) + 2(R) + O - 3 \tag{4}$$

The outcome of the BSNI calculation is then classified as one of four values: (1) low (2) medium (3) medium-high (4) high. While R and O are simple yes-no indicators, S is a binned sociability score constructed using 4 questions. S represents both the number of contacts and the frequency of interactions with them. The index is constructed using the questions outlined in Appendix B., Module 4.

4.2.3 Life Satisfaction

Life Satisfaction Scale (LSS). Perceived happiness, or life satisfaction, is another outcome that may be affected by mental health. We refer to the child psychology literature to create a construct for measuring life satisfaction. The Life Satisfaction Scale (LSS) is a global test to determine life satisfaction (Huebner et al., 2003). It is based on 7 statements on a 6-point Likert scale (Strongly

[10] The Appendix Module 2 provides the 6-part COGTEL we administered.

[11] This index is designed for individuals aged 18 and older. However, due to the low marriage rates in our sample—where participants are predominantly at the cusp of marriage and many have not yet officially begun their married lives (out of 6%, 5% of the individuals are committed/Nikkah solemnized – an Islamic contract of marriage – but have not moved in with their spouse to experience the intimate contact)—the applicability of the marriage component in our context is therefore limited.

Disagree, Disagree, Slightly Disagree, Slightly Agree, Agree, Strongly Agree).[12]

We construct a life satisfaction dummy variable, assigning it a value of 1 if the respondent selects a positive outlook (categories including and above 3) for all statements, and zero otherwise.[13]

4.3 Control Variables

Using demographic information collected at baseline (wave 1), we control for standard individuals' own factors (i.e., own age, ability – proxied by raven score), their household controls (income, household size), and parental controls (parents' (father's and mother's) age, education, household head's ability – proxied by a raven score).[14] In addition, we control for an individual's current anxiety index.

4.4 Empirical Specification

The structure of our data enables us to address a key question: do anxiety and depression during childhood-to-adolescent transition predict current status in early adulthood (including education, work, and marriage status), social connectedness, and life satisfaction? Our methodology relies on the assumption that lagged mental health variables are less likely to be influenced by current outcomes, allowing us to estimate the long-term impact of early-life mental health on adult life trajectories.

Our specification is as follows:

$$Outcome_{i,t} = \alpha + \beta_1 Mental\ Health_{i,t-3} + \beta_2 Mental\ Health_{it} + \gamma X_{i,t-3} + \epsilon_i \tag{5}$$

where i denotes the young adult, and $t = 2024$. $Mental\ Health_{i,t-3}$ – including the anxiety and depression indices – are measured from the past wave (in 2021), $Outcome_{i,t}$ represents binary indicators for school attendance (Yes/No), employment status (Yes/No), and marriage status (Yes/No), as well as indices for social connectedness and life satisfaction. $X_{i,t-3}$ denotes a

[12]The statements presented are provided in Appendix B. Module 3: (a) My life is going well, (b) My life is just right, (c) I would like to change many things in my life, (d) I wish I had a different kind of life, (e) I have a good life, (f) I have what I want in life, (g) My life is better than most students. Statement (7) is not included in this context, as many individuals are no longer students. Two of these statements are reverse-coded.

[13]Alternatively, when we exclude the value of 3 such that the dummy variables is strictly greater than 3 for a positive outlook, we observe less variation but the results shown in the next section are robust.

[14]This is an incentivized and age-appropriate Raven's Progressive Matrices (RPM) test that was administered for children and parents in 2018 to measure their cognitive ability.

comprehensive set of control variables from 2018. We also control for current anxiety levels $Mental\ Health_{it}$. These controls are incorporated to minimize omitted variable bias.

We cluster standard errors at the school level based on schools these adults attended in 2018. In Pakistan, schools often serve as geographic hubs around which families tend to reside for extended periods, influencing their social and economic outcomes within the area. Clustering at this level yields more conservative estimates while accounting for correlation in outcomes among individuals likely living within the same community.

Focusing on the lagged mental health indices, we hypothesize that better past mental health (lower anxiety and depression levels) would correlate with increased schooling participation, lower likelihood of being married, and ambiguous effects on work participation today. For social connectedness, we expect that individuals with poor past mental health may face greater challenges in forming social bonds today and could overall have lower life satisfaction today. In the next section, we present the results.

5 Results

5.1 Current Status Outcomes

We present results on how our young adults' past mental health relates to their current economic status (idle, in education, working, married) in Table 1. We begin by examining the relationship between our mental health measures – the anxiety index (2021), depression index (2021), and the current anxiety index (2024) – with various possible statuses in columns (1)-(3). Next, we include these mental health measures simultaneously in the analysis in column (4). Finally, we add child and household-level controls from 2018 in column (5) and parental controls from 2018 in column (6). Past mental health measures are likely more exogenous than current measures, as they are arguably unaffected by today's outcomes. We discuss our results below.

In column (1), we observe a positive relationship between the anxiety index and being idle or married, alongside a negative association with work status. A one-standard-deviation (SD) increase in the anxiety index (2021) is associated with a 8.3% higher likelihood of being idle and a 12.3% lower likelihood of being employed. In column (2), the effect of the depression index (2021) is generally insignificant, except for the association with work status, where a one-SD higher depression index (2021) is associated with a lower likelihood of working by 11%. For the current anxiety index (2024) (column 3), we find a strong correlation with both idle and work statuses. A one-SD higher anxiety index (2024) is associated with a 26.3% higher likelihood of being idle and an 18.8% lower likelihood of working.

In column (4), with all mental health variables included simultaneously, the observed effects

Table 1: **Current Status**

	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Idle						
Anxiety Index (2021)	0.0833*			0.0802	0.0747	0.0703
	(0.045)			(0.050)	(0.048)	(0.047)
Depression Index (2021)		0.0642		0.00361	0.00793	0.0122
		(0.050)		(0.051)	(0.049)	(0.050)
Anxiety Index (2024)			0.263***	0.262***	0.266***	0.260***
			(0.057)	(0.054)	(0.054)	(0.056)
Outcome Mean	0.316	0.316	0.316	0.316	0.316	0.316
Panel B: Education						
Anxiety Index (2021)	0.0283			0.0174	0.0148	0.0144
	(0.044)			(0.044)	(0.044)	(0.044)
Depression Index (2021)		0.0319		0.0213	0.0219	0.0220
		(0.042)		(0.035)	(0.034)	(0.035)
Anxiety Index (2024)			-0.0741	-0.0747	-0.0722	-0.0710
			(0.064)	(0.064)	(0.064)	(0.063)
Outcome Mean	0.425	0.425	0.425	0.425	0.425	0.425
Panel C: Work						
Anxiety Index (2021)	-0.123*			-0.103	-0.0963	-0.0914
	(0.061)			(0.069)	(0.065)	(0.064)
Depression Index (2021)		-0.111**		-0.0354	-0.0399	-0.0440
		(0.048)		(0.038)	(0.038)	(0.039)
Anxiety Index (2024)			-0.188**	-0.186**	-0.192**	-0.188**
			(0.078)	(0.073)	(0.071)	(0.071)
Outcome Mean	0.255	0.255	0.255	0.255	0.255	0.255
Panel D: Marriage						
Anxiety Index (2021)	0.0459**			0.0688**	0.0669**	0.0644**
	(0.022)			(0.032)	(0.032)	(0.030)
Depression Index (2021)		0.00401		-0.0429	-0.0406	-0.0401
		(0.016)		(0.029)	(0.028)	(0.028)
Anxiety Index (2024)			-0.0380	-0.0375	-0.0357	-0.0377
			(0.032)	(0.030)	(0.030)	(0.031)
Outcome Mean	0.0525	0.0525	0.0525	0.0525	0.0525	0.0525
Controls (Child & Household)	No	No	No	No	Yes	Yes
Controls (Parents)	No	No	No	No	No	Yes
Cluster N	32	32	32	32	32	32
N	800	800	800	800	800	800

Notes: The table reports ordinary least square (OLS) estimations at the individual level. Outcome variables include yes or no dummies for their most recent status: Idle (not working, studying), Education, Work, and Marriage. The dependent variables are listed under the outcomes column. Mental health measures include indices for Anxiety (2021), Depression (2021) and Anxiety (2024). Controls (Child) include the child's age and raven score in 2018, controls (household) include household income and size in 2018, and controls (parent) include the father's and mother's age and literacy and household head's raven score. The standard errors, clustered at the school level, are shown in parentheses.

on idle and work statuses are primarily driven by the current Anxiety Index. Education status shows no meaningful correlation with these mental health measures, while marriage status appears to be linked to past mental health only. These findings remain robust after adding child, household, and parental controls.

While we find no association between educational status and mental health issues, it is important to examine whether this lack of association applies only to the extensive margin (e.g., enrollment or attainment) or extends to the intensive margin (e.g., cognitive functioning). In Appendix Table A.2, using the COGTEL measure, we find that past mental health indices remain unrelated to cognitive function. However, current mental health – anxiety index (2024) – does show a significant effect, with a 1 SD increase in anxiety today is associated with a 4-point reduction in the COGTEL score—equivalent to an approximate 17% reduced cognitive functioning.

Regarding marriage, a one-SD increase in past anxiety levels is associated with a 6-7% increased likelihood of being married today. However, it is important to note that only 5.25% of the sample is married, suggesting that these effects are likely influenced by outliers (right-tail of the marriage distribution).

In Appendix Table A.3, we also present results from a multinomial logit model, classifying each observation into one of three prominent statuses: exclusively working, exclusively in education, or idle (neither working nor in education). We examine whether, relative to being idle, the likelihood of working or being in education aligns with the results presented above. Our findings indicate that this is the case: higher current anxiety levels (1 SD increase) are associated with a lower likelihood of both working and being in education relative to being idle. However, no significant relationship is observed between past anxiety (2021) or depression (2021) indices and these outcomes.

Overall, the key takeaway is that in the presence of the current anxiety index (2024), neither the past anxiety index (2021) nor the depression index (2021) show a meaningful correlation with outcomes, except in the case of marriage status. The lack of a significant relationship between past anxiety measures and key young adults' outcomes suggests an important conclusion: past anxiety does not meaningfully influence these critical milestones.

5.2 Social Connectedness

Concluding that past anxiety has no tangible impact on youth today would be incomplete without examining the dimension of social connectedness. This factor plays a critical role during formative and adolescent years and is equally essential in assessing overall wellbeing. Moreover, in LMICs, social connectedness plays a crucial role not only in navigating economic, social, and structural challenges, but also in preventing social isolation and fostering support networks, par-

ticularly during adverse events, which are more frequent in these settings. Limited social connectedness in such contexts can have long-lasting and far-reaching consequences, potentially undermining individuals' future opportunities and wellbeing.

Table 2: **Social Connectedness and Life Satisfaction**

	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Social Connectedness						
Anxiety Index (2021)	-0.204**			-0.166**	-0.152**	-0.158**
	(0.077)			(0.075)	(0.070)	(0.071)
Depression Index (2021)		-0.189**		-0.0680	-0.0772	-0.0787
		(0.073)		(0.057)	(0.057)	(0.062)
Anxiety Index (2024)			-0.294**	-0.291**	-0.292**	-0.307**
			(0.126)	(0.119)	(0.119)	(0.121)
Controls (Child & Household)	No	No	No	No	Yes	Yes
Controls (Parents)	No	No	No	No	No	Yes
Outcome Mean	2.029	2.029	2.029	2.029	2.029	2.029
Cluster N	32	32	32	32	32	32
N	800	800	800	800	800	800
Panel B: Life Satisfaction						
Anxiety Index (2021)	-0.0767***			-0.0635*	-0.0575*	-0.0589*
	(0.022)			(0.034)	(0.034)	(0.034)
Depression Index (2021)		-0.0693***		-0.0245	-0.0264	-0.0286
		(0.024)		(0.035)	(0.035)	(0.034)
Anxiety Index (2024)			-0.0447	-0.0437	-0.0421	-0.0457
			(0.045)	(0.041)	(0.040)	(0.040)
Controls (Child & Household)	No	No	No	No	Yes	Yes
Controls (Parents)	No	No	No	No	No	Yes
Outcome Mean	0.139	0.139	0.139	0.139	0.139	0.139
Cluster N	32	32	32	32	32	32
N	800	800	800	800	800	800

Notes: The table reports ordinary least square (OLS) estimations at the individual level. Outcome variables include the scores for the Berkman Social Network Index (2024) and Students' Life Satisfaction Scale (2024). The dependent variables are listed under the outcomes column. Mental health measures include indices for Anxiety (2021), Depression (2021) and Anxiety (2024). Controls (Child) include the child's age and raven score in 2018, controls (household) include household income and size in 2018, and controls (parent) include the father's and mother's age and literacy and household head's raven score. The standard errors, clustered at the school level, are shown in parentheses.

We thus turn to social connectedness to explore whether the anxiety index and depression Index from the past shape these aspects of young adults' lives today. We present our results in Panel A of Table 2. Similar to the previous table, we examine the effect of each mental health measure individually before including all of them together, followed by adding control variables.

When analyzing the anxiety index (2021) from the past, we find that a one-SD increase in past anxiety is associated with a 0.2-point decrease in social connectedness, equivalent to a 10% reduction relative to the mean. A similar association is observed for the depression index from

the past, showing a 9% reduction. Current anxiety (2024) is also linked to a 0.29-point (14%) decline in social connectedness. In column (3), where we include all mental health measures simultaneously, and in columns (4)–(5) with the inclusion of control variables, the effect of past anxiety decreases to 8%, while the effect of past depression becomes insignificant. However, current anxiety remains significantly and negatively associated with social connectedness, even though it is not entirely exogenous to the current outcome.

In summary, our findings reveal a significant negative relationship between past anxiety and social connectedness. This underscores a key conclusion: past anxiety (but not depression) has a lasting adverse effect on social connectedness, highlighting the enduring impact of mental health struggles from adolescence into young adulthood.

5.3 Life Satisfaction

Next, we examine overall life satisfaction as a comprehensive welfare measure, serving as an aggregate indicator of wellbeing. In Panel B of Table 2, we show that a one-SD increase in past anxiety (2021) reduces the likelihood of being satisfied with life by 7.7%, while current anxiety (2024) reduces this likelihood by 4.5%, but it is statistically insignificant. In contrast, the past depression index reduces the likelihood of life satisfaction by 7% but becomes insignificant when we include anxiety indices. These results remain consistent – both qualitatively and quantitatively – when all mental health measures are included simultaneously and when control variables are added.

In summary, our findings reveal a significant negative relationship between past anxiety and overall life satisfaction. This highlights a key conclusion: while past anxiety has no impact on economic status, it has a lasting detrimental effect on long-term life satisfaction, underscoring the enduring consequences of early mental health struggles.

5.4 Heterogeneity

In Appendix Table A.4, we assess heterogeneity in our outcomes by analyzing key contextual characteristics. First, we consider gender, which holds significant importance in LMICs due to differing social expectations and opportunities for males and females. Second, we explore past academic performance, which serves as a proxy for individual ability and potentially affects how mental health impacts outcomes. Finally, we account for current household income, recognizing its potential role in altering the relationship between mental health and adolescent outcomes. We do not find systematic heterogeneities in economic status, but we find that males and individuals from high-income households drive social connectedness.

6 Standardization of The Life Course

Our findings that economic status has little to no association with past mental health naturally lead to a discussion on the *standardization* of the life course, which provides a framework to rationalize these results. In particular, these milestones – education, employment, marriage, and work – are shaped by societal expectations, cultural norms, and institutional frameworks, establishing a predictable and widely recognized timeline for key life stages. We provide three pieces of evidence consistent with this idea of standardized life course milestones.

PSLM Data. First, we provide exploratory evidence by focusing on 16–20-year-olds in the 2020 Pakistan Social And Living Standards Measurement (PSLM) data.[15] In PSLM, 47% of individuals in this age group are currently studying, 27% are employed, and 13% are married. Our data reflect similar percentages for these status categories (42.5% studying, 26% working, and 5.3% married) (see Figure 2). With the exception of marriage, our sample closely mirrors patterns observed in representative datasets such as the PSLM, reinforcing the idea that economic status outcomes for these young adults are less determined by individual factors and pre-determined by external factors. In the context of a low-income country, external factors may include parental characteristics, cultural norms, and economic disadvantages. We do not find any meaningful heterogeneity by income for economic status in Appendix Table A.4. We next look at parental factors and cultural norms.[16]

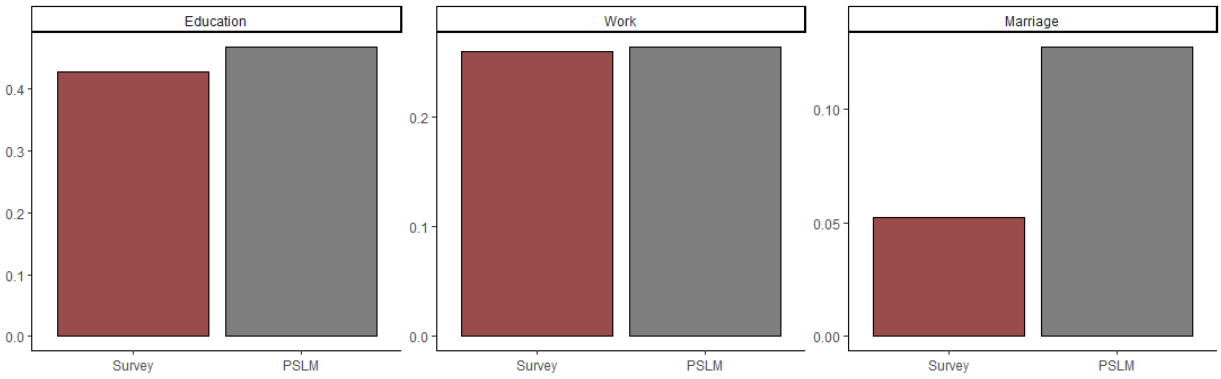
Shapley Decomposition. To emphasize the significant role of parental characteristics in shaping the life course of adolescents, compared to the influence of adolescents' own characteristics, we employ a Shapley decomposition, breaking down the proportion of the R-square explained by various factors. Results of this decomposition for status outcomes are presented in Table 3, while findings for social connectedness and life satisfaction are shown in Table 4.

In Table 3, we observe that the percentage of the R-square explained by past anxiety (2021) and depression (2021) indices is relatively small across most outcomes, with the exception of marriage status, where past anxiety accounts for 33% of the explained variation. In contrast, the current anxiety index emerges as the most influential factor across the majority of outcomes.

[15] The PSLM is a large-scale household survey conducted by the Pakistan Bureau of Statistics. It is designed to provide social and economic indicators at both provincial and district levels in alternate years, with modules providing information on education, employment, and marriage status.

[16] Additionally, purely focused on demographic life-course transitions (first sexual intercourse, first marriage/union, and first child), 2017-18 Demographic and Health Survey (DHS) data from Pakistan confirm that young adults' life courses are heavily standardized, exhibiting a rapid and sequential transition across life events with virtually no sexual intercourse outside of formal unions, little time spent in a union without children, and 40% of respondents having had their first child by age 20 (Appendix Figure A.1).

Figure 2: Status: PSLM vs. Survey



Notes: The figure compares key status outcomes between the PSLM dataset and our survey data. For the PSLM data, we use the most recent wave from 2020, focusing on individuals aged 16–20 years.

Table 3: **Shapley Decomposition: Status**

Group	**Idle**		**Education**		**Work**		**Marriage**	
	Value	(%)	Value	(%)	Value	(%)	Value	(%)
				Mental Health Indices				
Anxiety (2021)	0.00599	7.16%	0.00050	3.56%	0.01390	18.88%	0.01259	32.91%
Depression (2021)	0.00187	2.24%	0.00054	3.88%	0.00694	9.42%	0.00221	5.78%
Anxiety (2024)	0.05353	63.95%	0.00364	26.12%	0.03146	42.73%	0.00493	12.87%
				Controls (2018)				
Controls (Child)	0.00295	3.53%	0.00224	16.09%	0.01104	15.00%	0.00156	4.07%
Controls (Household)	0.00478	5.71%	0.00226	16.20%	0.00050	0.68%	0.00475	12.43%
Controls (Parents)	0.01458	17.42%	0.00476	34.15%	0.00979	13.29%	0.01222	31.94%

Notes: This table shows the Shapley decomposition of R-squared contributions (both values and percentages) for various dependent variables. Mental health measures include indices for Anxiety (2021), Depression (2021) and Anxiety (2024). Controls (Child) include the child's age and raven score in 2018, controls (household) include household income and size in 2018, and controls (parent) include the father's and mother's age and literacy and household head's raven score.

More importantly, the comparison between child controls from 2018 and parental controls from 2018 provides valuable insights into the dominant role of parental characteristics in determining these life-course outcomes. For instance, Idle status is six times more influenced by parental characteristics than by the child's own characteristics; education status is twice as influenced by parental variables as by the child's own factors; both child and parental factors equally explain work status. Marriage status is a striking example, with parental characteristics explaining outcomes eight times more than the child's own characteristics.

These findings reinforce the idea that life-course outcomes are less determined by the adolescent's own characteristics, including past mental health measures, and are instead shaped by

parental characteristics and decisions. This aligns with the cultural context of low-income South Asian countries, where adolescents typically remain within the parental home well into adulthood, often until marriage — and, in many cases for males, even after marriage. In such settings, individual's agency in decision-making is limited, and outcomes are more reflective of parental choices and household dynamics than one's independent actions or attributes.

Table 4: **Shapley Decomposition: Social-Connectedness & Life Satisfaction**

Group	**Social-Connectedness**		**Life-Satisfaction**	
	Value	(%)	Value	(%)
	Mental Health Indices			
Anxiety (2021)	0.01252	20.01%	0.00881	32.02%
Depression (2021)	0.00659	10.54%	0.00442	16.06%
Anxiety (2024)	0.02554	40.82%	0.00285	10.38%
	Controls (2018)			
Controls (Child)	0.00689	11.02%	0.00562	20.44%
Controls (Household)	0.00370	5.91%	0.00144	5.24%
Controls (Parents)	0.00732	11.69%	0.00436	15.86%

Notes: This table shows the Shapley decomposition of R-squared contributions (both values and percentages) for various dependent variables. Mental health measures include indices for Anxiety (2021), Depression (2021) and Anxiety (2024). Controls (Child) include the child's age and raven score in 2018, controls (household) include household income and size in 2018, and controls (parent) include the father's and mother's age and literacy and household head's raven score.

The patterns observed in Table 3 shift notably when we examine the Shapley decomposition for social connectedness and life satisfaction, as presented in Table 4. Here, the past mental health, particularly the anxiety index, explains a substantial share of the R-square, emerging as the most influential factor. While parental factors are as important as child-specific factors in explaining social connectedness, life satisfaction is predominantly driven by child-specific factors, with past mental health playing a central role.

These findings stand in contrast to the findings on life-course outcomes, where parental factors were far more dominant. All in all, our findings suggest a key distinction: social connectedness and life satisfaction are outcomes more directly influenced by the young adult's individual experiences and mental health history, highlighting a greater degree of agency in shaping these dimensions of adolescent well-being.

Power-Distance To further support our argument, we examine the role of power-distance norms as a cultural factor. A cultural norm emphasizing hierarchy—whether based on authority or age—places significant importance on deference to those in higher positions (Hofstede, 1980). In 2018, parents were surveyed about their views on whether individuals in higher social ranks should maintain social distance, avoid seeking opinions from lower-ranking individuals, make authoritative decisions, discourage questioning from subordinates, and withhold responsibilities from lower-ranking individuals. The responses to each dimension range from 1 to 5, where 1 denotes strongly disagree and 5 denotes strongly agree. Based on these responses, we sum the responses (the total range is 5 to 25) and constructed a dummy that takes a value of 1 to classify parents as either aligned with high power-distance norms if their sum is above the median value or low power-distance norms if their score is less than the median value.

We expect parents with high power-distance norms to be more likely to maintain strict authority, leaving limited space for adolescents to express their feelings, make autonomous choices, or adjust their life status based on personal factors and mental health. Conversely, low power-distance parents are more likely to involve their children in decision-making and allow flexibility in determining life outcomes.

Table 5: **Heterogeneity Analysis**

Outcome	Idle	Education	Work	Marriage	Social-Connectedness	Life-Satisfaction
Anxiety Index (2021)	0.130**	-0.019	-0.128*	0.082**	-0.222***	-0.066*
	(0.050)	(0.055)	(0.074)	(0.036)	(0.075)	(0.038)
Depression Index (2021)	0.005	0.020	-0.036	-0.042	-0.070	-0.025
	(0.052)	(0.035)	(0.038)	(0.029)	(0.056)	(0.035)
Anxiety Index (2024)	0.266***	-0.077	-0.188**	-0.036	-0.296**	-0.044
	(0.055)	(0.065)	(0.074)	(0.030)	(0.119)	(0.041)
Anxiety Index (2021) x High Power	-0.102	0.074	0.051	-0.027	0.116	0.006
	(0.062)	(0.052)	(0.040)	(0.028)	(0.083)	(0.024)
Anxiety Index (2021) on High Power	0.028	0.055	-0.077	0.055	-0.106	-0.061*
	(0.066)	(0.046)	(0.069)	(0.034)	(0.094)	(0.034)
Control Mean	0.316	0.425	0.255	0.053	2.029	0.139
R-2	0.070	0.007	0.055	0.023	0.046	0.017
N	800	800	800	800	800	800
Schools	32	32	32	32	32	32

Notes: The table presents ordinary least squares (OLS) estimation, using a specification that includes child, household, and parental control variables from 2018, the Anxiety Index (2021), the current Anxiety Index (2024) and the Depression Index (2021) at the student level. The specification also includes an interaction term between the Anxiety Index (2021) and a dummy for parents with high power-distance norms. The main explanatory variable is Anxiety Index from 2021 Anxiety Index from 2021 interacted with High power. The dependent variables are listed under the outcomes column. The Standard errors, clustered at the school level, are shown in parentheses.

Table 5 presents results based on this classification. We find suggestive evidence that in households with low power-distance norms, young adults' life status (idle, work, and marriage) is significantly influenced by their factors, including anxiety index from the past. Conversely, for parents who are characterized by high power-distance norms, the long-term effects on young

adults' outcomes are largely unaffected by their past anxiety index.

While the interaction term for status is not statistically significant, potentially due to limited statistical power, our estimates indicate a muted effect of anxiety among young adults with parents who adhere to high power-distance norms. This is further supported by the estimated anxiety coefficient for the sample with high power-distance parents, which is not significantly different from zero (although the variable "marriage" is close to significance).

These findings provide additional suggestive evidence of the "standardization effect" described in life course theory, where young adults with parents who uphold high power-distance norms are left with little-to-no agency in shaping their own pathways. In this context, these norms may act as a protective barrier, preventing poor mental health from the past to have long-lasting adverse effects. However, young adults' overall wellbeing continues to be impacted by both types of parents.

The reduced impact on social connectedness in households with authoritative parents may stem from the limited autonomy adolescents have over their social lives in such environments. Authoritative parents are more likely to restrict social interactions, dictate social choices, and maintain control over whom their children interact with. As a result, adolescents in these households may already experience reduced social connectedness with peers and others, leaving them more isolated and with fewer opportunities to develop meaningful social ties.

7 Conclusion

A growing body of research underscores the impact of adolescent mental health on future economic prospects, but two key gaps remain. First, the literature is predominantly focused on high-income countries. Second, it largely emphasizes economic outcomes, neglecting broader outcomes. We address these gaps by expanding the research to a low- and middle-income country, Pakistan, and examining multifaceted outcomes, including social connectedness and overall life satisfaction. Social connectedness is especially critical in LMICs, where informal networks often compensate for the absence of formal institutions, acting as safety nets during hardships and mitigating adverse effects.

To explore this, we leverage a unique longitudinal dataset spanning six years, tracking individuals in Kasur, Pakistan, through key developmental transitions. The first survey in 2018 captured data when participants were children. A follow-up in 2021-2022, during the COVID-19 lockdowns, coincided with their transition from childhood to adolescence, allowing us to collect past anxiety and depression measures. The final survey in 2024 followed these individuals into young adulthood, capturing current anxiety levels alongside current economic status, social connectedness, and overall life satisfaction. This design enables us to assess the impact of early-life

mental health on outcomes today.

Our findings reveal that past anxiety, but not past depression, significantly shapes social connectedness and overall life satisfaction in young adults. However, we find no association between past mental health and economic status, aligning with the idea of "standardized" life courses, suggesting that youth economic trajectories often follow a standardized path due to limited autonomy. We provide three key pieces of evidence supporting this framework.

First, exploratory analysis shows that economic status in our data mirrors distributions in the Pakistan Social and Living Standards Measurement (PSLM), a large-scale household survey by the Pakistan Bureau of Statistics. This suggests that economic outcomes in our sample follow standardized patterns, with external factors likely playing a more significant role. Second, we explore these external factors by conducting a Shapley decomposition of the R-squared. The results reveal that parental characteristics dominate in determining young adults' economic status, while they play a less significant role in shaping social connectedness and life satisfaction. Third, we incorporate the cultural norm of power distance, which reflects limited autonomy for individuals whose parents adhere to such norms. We find that high power distance parents diminish the influence of past mental health on economic outcomes.

In conclusion, the long-term effects of adolescent mental health are most evident in social connectedness and overall life satisfaction. Policymakers should prioritize interventions addressing adolescent social isolation through school programs and expanded mental health services, as these effects are likely to accumulate and influence future life stages.

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Table A.1: **Balance Table**

	(1)		(2)		(3)		(4)		(5)		(1)-(5)		(2)-(5)		(3)-(5)		(4)-(5)	
	Wave 1		Wave 2		Wave 3		Wave 4		Wave 5		Pairwise t-test							
Variable	N	Mean/(SE)	N	Mean/(SE)	N	Mean/(SE)	N	Mean/(SE)	N	Mean/(SE)	N	P-value	N	P-value	N	P-value	N	P-value
Father's Literacy (Y/N)	1417	0.341	980	0.341	975	0.339	902	0.344	800	0.339	2217	0.920	1780	0.927	1775	0.974	1702	0.831
		(0.013)		(0.015)		(0.015)		(0.016)		(0.017)								
Mother's Literacy (Y/N)	1417	0.146	980	0.143	975	0.142	902	0.146	800	0.146	2217	0.991	1780	0.840	1775	0.778	1702	0.996
		(0.009)		(0.011)		(0.011)		(0.012)		(0.013)								
Father's Age	1416	43.422	980	43.615	975	43.632	902	43.629	800	43.452	2216	0.918	1780	0.609	1775	0.571	1702	0.583
		(0.176)		(0.214)		(0.215)		(0.222)		(0.234)								
Mother's Age	1416	38.913	980	39.102	975	39.128	902	39.087	800	38.873	2216	0.882	1780	0.430	1775	0.382	1702	0.467
		(0.164)		(0.197)		(0.197)		(0.202)		(0.213)								
Head's Raven	1416	21.918	980	21.338	975	21.315	902	21.354	800	21.694	2216	0.574	1780	0.395	1775	0.366	1702	0.427
		(0.243)		(0.280)		(0.281)		(0.294)		(0.312)								
Child's Age	1411	12.114	979	12.154	974	12.160	901	12.137	800	12.128	2211	0.827	1779	0.686	1774	0.619	1701	0.889
		(0.038)		(0.042)		(0.042)		(0.044)		(0.047)								
Child's Raven	1416	17.244	980	17.338	975	17.315	902	17.230	800	17.324	2216	0.733	1780	0.955	1775	0.972	1702	0.707
		(0.141)		(0.168)		(0.169)		(0.171)		(0.181)								
Child's Gender	1416	0.463	980	0.435	975	0.436	902	0.435	800	0.419	2216	0.046**	1780	0.499	1775	0.468	1702	0.510
		(0.013)		(0.016)		(0.016)		(0.017)		(0.017)								
log(Income) Household	1417	7.429	980	7.377	975	7.395	902	7.433	800	7.434	2217	0.979	1780	0.768	1775	0.840	1702	0.995
		(0.107)		(0.129)		(0.129)		(0.134)		(0.142)								
Household Size	1416	6.839	980	6.860	975	6.862	902	6.881	800	6.897	2216	0.377	1780	0.592	1775	0.616	1702	0.821
		(0.040)		(0.047)		(0.047)		(0.049)		(0.052)								

Notes: This table compares 2018 variables across the Wave 5 sample and Waves 1–4, with all variables, including time-varying ones such as age, income, and household size, measured using their 2018 values to identify any systematic biases from attrition. Wave 5 is the focus as it provides the outcome variables. Specifically, the Wave 5 (2024) sample is compared with Wave 1 (2018) in Column (1)-(5), Wave 2 (2020) in Column (2)-(5), Wave 3 (2020) in Column (3)-(5), and Wave 4 (2021) in Column (4)-(5).

Table A.2: **COGTEL Outcome**

	(1)	(2)	(3)	(4)	(5)	(6)
Anxiety Index (2021)	0.956			1.033	0.974	0.963
	(0.807)			(0.546)	(0.652)	(0.646)
Depression Index (2021)		0.527		-0.114	-0.117	-0.152
		(0.717)		(0.681)	(0.542)	(0.553)
Anxiety Index (2024)			-3.907***	-3.912***	-3.918***	-3.948***
			(1.014)	(1.022)	(1.027)	(1.017)
Controls (Child & Household)	No	No	No	No	Yes	Yes
Controls (Parents)	No	No	No	No	No	Yes
Outcome Mean	23.612	23.612	23.612	23.612	23.612	23.612
Cluster N	32	32	32	32	32	32
N	800	800	800	800	800	800

Notes: The table reports ordinary least square (OLS) estimations at the individual level. Outcome variable is COGTEL score. Mental health measures include indices for Anxiety (2021), Depression (2021) and Anxiety (2024). Controls (Child) include the child's age and raven score in 2018, controls (household) include household income and size in 2018, and controls (parent) include the father's and mother's age and literacy and household head's raven score. The standard errors, clustered at the school level, are shown in parentheses.

Table A.3: **Current Status: Multinomial Logit**

Variables	**Working vs. Idle**	**Education vs. Idle**
Anxiety Index (2021)	0.497	0.820
	(0.489)	(0.176)
Depression Index (2021)	0.694	0.986
	(0.344)	(0.200)
Anxiety Index (2024)	0.154***	0.388***
	(0.511)	(0.287)
Controls (Child & Household)	Yes	Yes
Controls (Parents)	Yes	Yes
Outcome Mean	0.231	0.427
Cluster N	32	32
N	797	797

Notes: Note: Results from multinomial regression with the dependent variable of status as a categorical variable with 3 categories: Baseline category of 0 is Idle, category 2 is Working and category 3 is Education. Standard errors (in brackets) are clustered at the school-level. All numeric values are displayed up to 3 decimal places. Stars indicate significance: * $p < 0.050$, ** $p < 0.010$.

Heterogeneity

We assess heterogeneity in our outcomes by analyzing key contextual characteristics. First, we consider gender, which holds significant importance in LMICs due to differing social expectations and opportunities for males and females. Second, we explore past academic performance, serving as a proxy for individual ability and potentially affecting how mental health impacts outcomes. Finally, we account for current household income, recognizing its potential role in altering the relationship between mental health and adolescent outcomes. We do so with an interaction model where we interact anxiety index (2021) with the dummy for the heterogeneity dimension.

Gender. For gender, we observe no distinct pattern except for social connectedness and somewhat marriage status. The observed impact of past anxiety on social connectedness for females being insignificant aligns with cultural norms, as young females also face restrictions in terms of their social circles. We also observe that females are more likely to be married than males with an increased past anxiety. However, the difference between males and females is not significant.

Academic Performance. We utilize administrative scores from the 2018 class 5 exams taken by the children at that time. In that year, students participated in a centrally administered exam designed for the transition from primary school (class 5) to middle school (class 6). While these central exams are no longer conducted, we obtained administrative data from 2018, allowing us to construct a dummy of 1 if the individual in our sample received above the median score.

When examining outcomes based on this academic split, we find that none of the interactions are significant.

Household Income. Finally, we examine current household income as an additional dimension of heterogeneity. While past income is included as a control variable, it may no longer fully capture the household's economic status today, given the economic disruptions caused by COVID-19, floodings, and the natural progression of children growing up and able to earn wages. Therefore, using current income provides a more accurate representation of whether, at present, a household is relatively poor or rich.

We find that effects are more pronounced among adolescents from higher-income households; however, we do not see any significant interaction effect for most of the variables except for social connectedness. This might seem counterintuitive, as one might expect greater vulnerability among young adults from lower-income families. However, this pattern suggests that in wealthier households, adults may face fewer financial pressures, such as the need to contribute to household income through work or the ability to afford marriage-related expenses. As such,

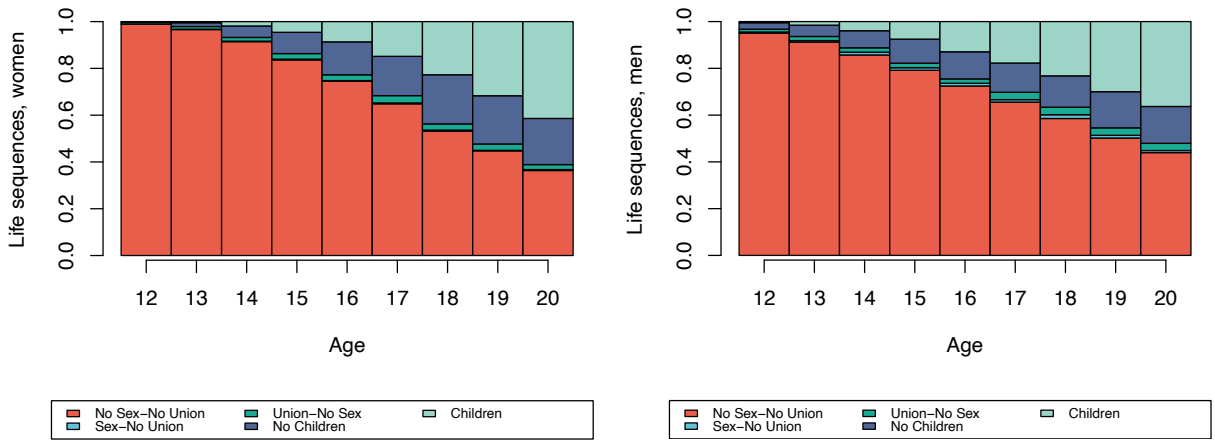
Table A.4: **Heterogeneity Analysis**

Outcome	Social-Connectedness	Life-Satisfaction	Idle	Education	Work	Marriage
Panel A: Gender						
Anxiety Index (2021)	-0.207*	-0.062	0.021	-0.005	-0.036	0.028
s.e	(0.109)	(0.050)	(0.064)	(0.068)	(0.089)	(0.028)
Depression Index (2021)	-0.052	-0.023	0.005	0.011	-0.026	-0.041
s.e	(0.063)	(0.032)	(0.042)	(0.038)	(0.028)	(0.028)
Anxiety Index (2024)	-0.392***	-0.065*	0.302***	-0.024	-0.276***	-0.022
s.e	(0.102)	(0.038)	(0.051)	(0.061)	(0.047)	(0.026)
Anxiety Index (2021) x Gender	0.233**	0.037	0.019	-0.044	0.045	0.040
s.e	(0.109)	(0.043)	(0.063)	(0.072)	(0.082)	(0.034)
Anxiety Index (2021) on Female	0.026	-0.025	0.040	-0.049	0.010	0.068*
s.e	(0.058)	(0.026)	(0.036)	(0.038)	(0.028)	(0.033)
Control Mean	2.029	0.139	0.316	0.425	0.255	0.053
R-2	0.135	0.044	0.118	0.057	0.257	0.057
N	800	800	800	800	800	800
Schools	32	32	32	32	32	32
Panel B: Test Scores						
Anxiety Index (2021)	-0.087	-0.072*	0.064	0.014	-0.078	0.050
s.e	(0.074)	(0.038)	(0.048)	(0.045)	(0.056)	(0.034)
Depression Index (2021)	-0.091	-0.030	0.015	0.042	-0.064*	-0.043
s.e	(0.069)	(0.034)	(0.050)	(0.037)	(0.032)	(0.029)
Anxiety Index (2024)	-0.299**	-0.047	0.259***	-0.070	-0.187***	-0.040
s.e	(0.116)	(0.040)	(0.055)	(0.062)	(0.067)	(0.031)
Anxiety Index (2021) x Test Scores	-0.129	0.036	0.007	-0.060	0.030	0.043
s.e	(0.103)	(0.036)	(0.055)	(0.050)	(0.056)	(0.027)
Anxiety Index (2021) on Low Test Scores	-0.216**	-0.036	0.070	-0.046	-0.048	0.093**
s.e	(0.104)	(0.037)	(0.058)	(0.057)	(0.076)	(0.035)
Control Mean	2.029	0.139	0.316	0.425	0.255	0.053
R-2	0.077	0.028	0.085	0.028	0.098	0.040
N	800	800	800	800	800	800
Schools	32	32	32	32	32	32
Panel C: Income						
Anxiety Index (2021)	0.039	-0.042	0.061	-0.046	-0.015	0.054
s.e	(0.080)	(0.033)	(0.061)	(0.048)	(0.076)	(0.036)
Depression Index (2021)	-0.089	-0.030	0.014	0.026	-0.050	-0.040
s.e	(0.064)	(0.034)	(0.050)	(0.035)	(0.038)	(0.028)
Anxiety Index (2024)	-0.223**	-0.034	0.246***	-0.110*	-0.134**	-0.030
s.e	(0.090)	(0.036)	(0.052)	(0.060)	(0.054)	(0.024)
Anxiety Index (2021) x Income	-0.316***	-0.025	0.013	0.093	-0.118	0.020
s.e	(0.093)	(0.040)	(0.078)	(0.074)	(0.091)	(0.040)
Anxiety Index (2021) on High Income	-0.277***	-0.068	0.074	0.047	-0.132*	0.074**
s.e	(0.082)	(0.042)	(0.059)	(0.061)	(0.073)	(0.034)
Control Mean	2.029	0.139	0.316	0.425	0.255	0.053
R-2	0.084	0.029	0.085	0.023	0.094	0.040
N	800	800	800	800	800	800
Schools	32	32	32	32	32	32

Notes: The table presents ordinary least squares (OLS) estimation, using a specification that includes child, household, and parental control variables from 2018, the Anxiety Index (2021), the current Anxiety Index (2024) and the Depression Index (2021) at the individual level. The specification also includes an interaction term between the Anxiety Index (2021) and a dummy for Gender (=1 if Female), Test Score (=1 if above median), and Income (2024) (=1 if above median). The main explanatory variable is Anxiety Index from 2021 Anxiety Index from 2021 interacted with **High power**. The dependent variables are listed under the outcomes column. The Standard errors, clustered at the school level, are shown in parentheses.

social connectedness only emerges as an outcome that is affected in high-income settings and contexts less constrained by immediate financial needs.

Figure A.1: Sequences of life events, DHS data



Notes: The figure plots life sequences using sequence analysis from 2017-18 Pakistani Demographic and Health Survey Data (DHS), focusing separately on female (left) and male (right) young adults. Life-course trajectories are constructed using a state-space composed of five different states: "no sexual intercourse—not in a union," "sexual intercourse—not in a union," "no sexual intercourse—in a union," "sexual intercourse—in a union, no children," and "sexual intercourse—in a union, one child or more." Groups in the legend are, by design, mutually exclusive and derived from individual information on age at first sexual intercourse, age at first union, and age at childbearing. The group "sex, no union" always includes women without children. The category "No children," instead, includes women who are in a union, have had sex, but no children.

B. Survey

Prefilled from CTO

1. NAME OF STUDENT: *Autofilled by survey CTO*
2. ID FROM THE LAST SURVEY: *Autofilled by survey CTO*
3. FATHER'S NAME: *Autofilled by survey CTO*
4. MOTHER'S NAME: *Autofilled by survey CTO*

B1: Brief Introduction

Hello, we are a survey company and previously we contacted you regarding STUDENT NAME in 2018 and during COVID. We asked you questions about their school and well-being during COVID. Today we want to speak with the STUDENT NAME and their father or mother about STUDENT""S NAME well being and economic activity. This research is again conducted by the New York University Professor (Samreen Malik). Your participation is completely voluntary, and not participating won't affect you in any way. We do not collect national ID that will link your information with your responses and we do not share the information with anyone. This will be used for research only. There are no risks and in terms of benefits, you will receive 200 PKR phone credit as a thank you reward for speaking with us and answering the questions for 20 minutes.

Do you give us verbal consent to continue with our questions?

1. YES
2. NO

B2: Confirmation

1. Could you confirm if STUDENT NAME is part of this family? Student Name: (Auto filled by Survey CTO) (Confirm with Responder)
   (a) YES
   (b) NO
2. Proceed only if the details [B.1 = YES] are confirmed by responder. If B.1 = NO (information doesn't match) please end the survey by selecting wrong number.

(a) Confirmed

(b) Not confirmed (Wrong #)

3. Could you confirm if STUDENT NAME'S father is FATHER NAME? Father Name: (Auto filled by Survey CTO)

   (a) YES

   (b) NO

4. Could you confirm if STUDENT NAME'S mother is MOTHER NAME? Mother Name: (Auto filled by Survey CTO)

   (a) YES

   (b) NO

5. Are you the father or mother of STUDENT NAME?

   (a) Father

   (b) Mother

   (c) Other (Specify)

6. If OTHER, could you please ask STUDENT'S NAME FATHER OR MOTHER to come on the phone or provide their contact information (Phone).

   (a) YES

   (b) NO

   (c) Alternative Phone number (full #)

7. Proceed only if the details [B.5 = a or b] are confirmed by responder.
   If B.6 = c - ALTERNATIVE number (information matches but new number) please end the survey by selecting confirmed with alternative number and call the alternative number and start from Section A.

   (a) Confirmed

   (b) Confirmed with alternative phone number

   (c) Not confirmed (wrong number)

8. We also want to directly speak with STUDENT NAME.
   Would that be okay with you?

(a) YES

(b) NO

9. Does STUDENT NAME have an independent phone number?

   (a) YES

   (b) NO

10. If NO, is this phone number the best way to reach the STUDENT NAME?

    (a) YES

    (b) NO

11. If YES, Please provide the number to contact STUDENT NAME?
    STUDENT NAME #

12. Is it a good time for us to speak with you for 20 minutes?

    (a) YES

    (b) NO

13. When is the best time to contact you?
    Date:_____
    Time:_____

14. When is the best time to contact STUDENT NAME?
    Date:_____
    Time:_____

B3: Survey Questions for Parents

Module 1: Background

1. Is the father of STUDENT NAME alive?

   (a) YES

   (b) NO

2. Is the mother of STUDENT NAME alive?

(a) YES

(b) NO

3. What is the age of the Father?
   Age: _____

4. What is the age of the Mother?
   Age: _____

5. What is the education level of the father of STUDENT NAME?

   (a) No Education

   (b) Class 1

   (c) Class 2

   (d) Class 3

   (e) Class 4

   (f) Class 5

   (g) Class 6

   (h) Class 7

   (i) Class 8

   (j) Class 9

   (k) Class 10

   (l) Polytechnic diploma

   (m) FA/F.Sc/I.Com

   (n) BA/B.Sc/B.Com

   (o) Post Graduate - M.A/MSc./MBA (Masters)/PhD

   (p) Other (Specify)

6. What is the education level of the mother of STUDENT NAME?

   (a) No Education

   (b) Class 1

   (c) Class 2

   (d) Class 3

(e) Class 4

(f) Class 5

(g) Class 6

(h) Class 7

(i) Class 8

(j) Class 9

(k) Class 10

(l) Polytechnic diploma

(m) FA/F.Sc/I.Com

(n) BA/B.Sc/B.Com

(o) Post Graduate - M.A/MSc./MBA (Masters)/PhD

(p) Other (Specify)

7. What is your current marital status?

   (a) Married

   (b) Widowed

   (c) Separated

   (d) Divorced

   (e) Single/Never Married

   (f) Refused to Answer

8. What is the family size of the household including yourself?

   _____

9. How many of the members from the family size of this household are part of your own family?

   _____

10. How important is religion in your life ?

    (a) very important

    (b) important

    (c) Somewhat important

    (d) not too important

    (e) not at all important

Module 2: Employment

1. Are you engaged in any work (that pays) at least for one hour?
   (a) YES
   (b) NO
2. Even if you do not work that pays for an hour, are you engaged in some other activities such as working on your own business, unpaid work, paid work such as commission or small scale work which pays either in cash or kind?
   (a) YES
   (b) NO
3. What best describes your current employment status? Employment Status?
   (a) Employed full-time
   (b) Employed part-time
   (c) Unemployed, looking for work
   (d) Unemployed, not looking for work
   (e) Self-employed
   (f) Housewife
   (g) Retired
4. Which of the following describe your work situation at your main work?
   (a) Employee
   (b) Own account worker
   (c) Employer
   (d) Member of producer's cooperative
   (e) Unpaid family work
   (f) Refused to Answer
5. What is the total monthly income of your household?

   Please include income from all sources before taxes for all members (including yourself) of your household. Select one range that best describes your total household income last month.

(a) Nothing

(b) Under PKR 15,000

(c) PKR 15,000 to PKR 20,000

(d) PKR 20,000 to PKR 24,999

(e) PKR 25,000 to PKR 29,999

(f) PKR 30,000 to PKR 34,999

(g) PKR 35,000 to PKR 39,999

(h) PKR 40,000 to PKR 44,999

(i) PKR 45,000 to PKR 49,999

(j) PKR 50,000 to PKR 59,999

(k) PKR 60,000 to PKR 69,999

(l) PKR 70,000 to PKR 79,999

(m) PKR 80,000 to PKR 99,999

(n) PKR 100,000 to PKR 149,999

(o) PKR 150,000 to PKR 199,999

(p) Above 200,000 PKR

(q) Prefer not to say

Module 3: Child questions + mental Health of Children (current)

1. What is STUDENT NAME current age?
   Age:_____

2. What is the current education status of STUDENT NAME?

   (a) Not currently studying

   (b) Enrolled in high school

   (c) Enrolled in college/university

   (d) Other

3. In which class did STUDENT NAME enroll last year?

   (a) Class 6

(b) Class 7

(c) Class 8

(d) Class 9

(e) Class 10

(f) Polytechnic diploma [

(g) FA/F.Sc/I.Com

(h) Was not in school last year

4. What was the highest class completed by STUDENT NAME as of today?

(a) Class 6

(b) Class 7

(c) Class 8

(d) Class 9

(e) Class 10

(f) Polytechnic diploma [

(g) FA/F.Sc/I.Com

(h) Other (Specify)

5. What is the current marital status of STUDENT NAME?

(a) Unmarried / Never Married

(b) Currently Married

(c) Widow / widower

(d) Divorced

(e) Nikkah/manghni solemnised but Rukhsati not taken place

6. What is the current employment status of STUDENT NAME?

(a) Employed full-time

(b) Employed part-time

(c) Unemployed, looking for work

(d) Unemployed, not looking for work

(e) Self-employed

(f) Retired

7. If STUDENT NAME is not in school, employed or married, what are they currently doing?

   (a) Idle [Does not do anything]

   (b) Preparing for CSS

   (c) Unwell

   (d) Hangs out with friends

   (e) Looking for a job

   (f) Helps in the house

   (g) Works in family business

   (h) Other (Specify)

Module 4: Mental Health as reported by parents

1. Over the last two weeks, how would you rate your child STUDENT NAME's physical health?

   (a) Poor

   (b) Fair

   (c) Good

   (d) Very Good

   (e) Excellent

2. Over the last two weeks, how would you rate your child STUDENT NAME's quality of life?

   (a) Poor

   (b) Fair

   (c) Good

   (d) Very Good

   (e) Excellent

3. Over the last two weeks, how would you rate your child STUDENT NAME's satisfaction with his/her social activities and relationships?

(a) Poor

(b) Fair

(c) Good

(d) Very Good

(e) Excellent

4. Over the last two weeks, how would you rate your child STUDENT NAME's mental health and ability to think?

(a) Poor

(b) Fair

(c) Good

(d) Very Good

(e) Excellent

5. Over the last two weeks, how would you rate your child STUDENT NAME's sleep quality?

(a) Poor

(b) Fair

(c) Good

(d) Very Good

(e) Excellent

6. Over the last two weeks, how would you rate your child STUDENT NAME's eating habits?

(a) Poor

(b) Fair

(c) Good

(d) Very Good

(e) Excellent

Module 5: Significant Event related to Covid

1. During Covid, has your family experienced death of close family member?

(a) YES

(b) NO

2. During Covid, did your family experience income problems at home?

   (a) YES

   (b) NO

3. During Covid, did the STUDENT NAME needs to work to earn income?

   (a) YES

   (b) NO

4. During Covid, did the STUDENT NAME education interrupted?

   (a) YES

   (b) NO

B4. Survey Questions for Young Adults

Module 1: Background & Consent

(a) Student ID:
Prefill from Survey CTO

(b) Phone Number Provided by the Parent:
Prefill from Survey CTO

(c) Is the number shared with the parent respondent or independent number?
Prefill from Survey CTO

   i. Shared with Parent

   ii. Independent Number

   iii. Other

(d) Try X: Did someone pick up the call?

   i. Yes

   ii. No

(e) We need to talk to RESPONDENT NAME. Can you please bring him / her on the call?

   i. Yes, I am RESPONDENT NAME.

ii. Wait, let me get RESPONDENT NAME on the call.

iii. Yes, but RESPONDENT NAME is not available right now.

iv. Yes, I can give you RESPONDENT NAME number.

v. No.

(f) If Q5=3,4,5
Q5=3 – Please note the number of RESPONDENT NAME.
Q5=4 – Please schedule another time

i. New Number: _____

ii. New Time: _____

Once the RESPONDENT NAME is on the call, confirm the following:

(g) What is your name?
Child Name: CHILD NAME [Prefilled from Survey CTO]
Confirm:

i. Yes

ii. No

(h) What is your father's name?
Father's Name: FATHER'S NAME [Prefilled from Survey CTO]
Confirm:

i. Yes

ii. No

(i) What is your mother's name?
Mother's Name: MOTHER'S NAME [Prefilled from Survey CTO]
Confirm:

i. Yes

ii. No

(j) What is your age? Age in Years: _____

(k) If Q5=1,2 and Q7 = 1 (YES)

Hello, we are a survey company and previously we contacted your parents regarding your schooling in 2018 and during COVID. We asked your parents questions about your school and well-being during COVID. Today we want to speak with youabout what you are currently doing. This research is again conducted by the New York University Professor (Samreen Malik). Today we want to ask you a few questions and

also ask you participate in a short quiz. Your participation is completely voluntary, and not participating won't affect you in any way. We do not collect national ID that will link your information with your responses and we do not share the information with anyone. This will be used for research only. There are no risks and in terms of benefits, you will receive 200 PKR phone credit as a thank you reward for speaking with us and answering the questions for 30 minutes. We have a consent from your parents to contact you. Do you also give us verbal consent to continue with our questions?

i. Yes

ii. No

(l) You voluntarily agree to participate?

i. Agree

ii. Disagree

Module 2: COGTEL

We will now start with the quiz

(a) At a later point in time during this test, there will be a task in which you should name different kinds of furniture. Thus, when I later say Please try to name as many kinds of furniture as possible during 1 minute then please unsolicitedly tell me your year of birth. Do you have any questions about this task?

i. Yes

ii. No

(b) Now I will read a couple of word pairs to you. After that, I will name the first word and you should recall the associated second word. Let's suppose I say east–west and gold–walk, then when I later say east you should say west. And when I say gold, you should respond walk. Listen carefully.

tool–hammer
brush–paint
sofa–cheese
music–eagle
beverage–juice
gulp–car
animal–fish

Sheesham–scissors

Which word was associated with …?

Later, I will ask for these word-pairs once again, so don't forget them.

A. Animal
   Correct Answer: Fish
   A. Correct
   B. Incorrect

B. Gulp
   Correct Answer: Car
   A. Correct
   B. Incorrect

C. Beverage
   Correct Answer: Juice
   A. Correct
   B. Incorrect

D. Brush
   Correct Answer: Paint
   A. Correct
   B. Incorrect

E. Sheesham
   Correct Answer: Scissors
   A. Correct
   B. Incorrect

F. Tool
   Correct Answer: Hammer
   A. Correct
   B. Incorrect

G. Music
   Correct Answer: Eagle
   A. Correct
   B. Incorrect

H. Sofa

Correct Answer: Cheese

A. Correct

B. Incorrect

(c) Now I will read a couple of digits to you. When I have finished, you should repeat these digits in reverse order. For instance, when I say 2–8, then you should say 8–2. (Let the participant give the answer.) (If the participant does not say 8–2): No, I said 2–8, so you should say 8–2. Please try to repeat the following digits in reverse order: 3–6.

A. 1-5

A. Correct

B. Incorrect

B. 8-3

A. Correct

B. Incorrect

C. 3-9-4

A. Correct

B. Incorrect

D. 6-2-5

A. Correct

B. Incorrect

E. 4-1-8-3

A. Correct

B. Incorrect

F. 5-9-6-1

A. Correct

B. Incorrect

G. 2-5-9-2-6

A. Correct

B. Incorrect

H. 6-2-5-8-4

A. Correct

B. Incorrect

I. 6-8-2-5-1-9

A. Correct

B. Incorrect

J. 4-6-9-1-3-8

A. Correct

B. Incorrect

K. 8-2-1-9-3-5-4

A. Correct

B. Incorrect

L. 4-5-3-9-2-1-8

A. Correct

B. Incorrect

(d) Now please try to name as many words as possible that begin with the letter K during 1 minute. You should not repeat any words and you should not say any names, for instance, Kamran or Kinza is not valid.

i. Number of named words: _____

ii. Number of names: _____

iii. Number of repeated words: _____

(e) Now I will present you with sequences of numbers that are built up after a specific rule. Each sequence of numbers can be continued by applying this rule. Your task is to continue each sequence of numbers. In each case, I will present you with 5 numbers and you should add the sixth number. For instance, when I present you with the sequence 1–2–3–4–5, then the rule would be +1 and you should add the number 6. Do you have any questions about this task?

A. 2-4-6-8-10-
   Correct Answer: 12
   A. Correct
   B. Incorrect

B. 4-7-10-13-16-
   Correct Answer: 19
   A. Correct
   B. Incorrect

C. 64-92-66-95-68-
   Correct Answer: 98
   A. Correct
   B. Incorrect

D. 26-14-28-17-30-
   Correct Answer: 20
   A. Correct
   B. Incorrect

E. 11-3-12-6-13-
   Correct Answer: 9
   A. Correct
   B. Incorrect

F. 3-5-8-12-17-
   Correct Answer: 23
   A. Correct
   B. Incorrect

G. 9-11-14-18-23-
   Correct Answer: 29
   A. Correct

B. Incorrect

H. 22-21-19-16-12-
Correct Answer: 7

A. Correct

B. Incorrect

(f) A short while ago, I read some word pairs to you. Now, I will again name the first words of each word pair and you should try to recall which words were associated with the words I name.

Which word was associated with ...?

A. Sheesham
Correct Answer: Scissors

A. Correct

B. Incorrect

B. Brush
Correct Answer: Paint

A. Correct

B. Incorrect

C. Tool
Correct Answer: Hammer

A. Correct

B. Incorrect

D. Music
Correct Answer: Eagle

A. Correct

B. Incorrect

E. Beverage
Correct Answer: Juice

A. Correct

B. Incorrect

F. Sofa
Correct Answer: Cheese

A. Correct

B. Incorrect

G. Animal

Correct Answer: Fish

A. Correct

B. Incorrect

G. Gulp

Correct Answer: Car

A. Correct

B. Incorrect

Module 3: General Life Satisfaction

Please indicate your level of agreement with the following statements:

We would like to know what thought about life you've had during the past several weeks. Think about how you spend each day and night and then think about how your life has been during most of this time. Here are some question that ask you to indicate your satisfaction with life.

(a) My life is going well

i. Strongly Disagree

ii. Disagree

iii. Slightly Disagree

iv. Slightly Agree

v. Agree

vi. Strongly Agree

(b) My life is just right

i. Strongly Disagree

ii. Disagree

iii. Slightly Disagree

iv. Slightly Agree

v. Agree

vi. Strongly Agree

(c) I would like to change many things in my life (reverse scored)

i. Strongly Disagree
ii. Disagree
iii. Slightly Disagree
iv. Slightly Agree
v. Agree
vi. Strongly Agree

(d) I wish I had a different kind of life (reverse scored)

i. Strongly Disagree
ii. Disagree
iii. Slightly Disagree
iv. Slightly Agree
v. Agree
vi. Strongly Agree

(e) I have a good life

i. Strongly Disagree
ii. Disagree
iii. Slightly Disagree
iv. Slightly Agree
v. Agree
vi. Strongly Agree

(f) I have what I want in life

i. Strongly Disagree
ii. Disagree
iii. Slightly Disagree
iv. Slightly Agree
v. Agree
vi. Strongly Agree

Module 4: Social Connectedness

(a) How many close friends do you have, people that you feel at ease with, can talk about private matters?

i. None
ii. 1 or 2
iii. 3 to 5
iv. 6 to 9
v. 10 or more
vi. Unknown

(b) How many of these close friends do you see at least once a month?

i. None
ii. 1 or 2
iii. 3 to 5
iv. 6 to 9
v. 10 or more
vi. Unknown

(c) How many relatives do you have, people that you feel at ease with, can talk to about private matters?

i. None
ii. 1 or 2
iii. 3 to 5
iv. 6 to 9
v. 10 or more
vi. Unknown

(d) How many of these relatives do you see at least once a month?

i. None
ii. 1 or 2
iii. 3 to 5
iv. 6 to 9
v. 10 or more
vi. Unknown

(e) Do you participate in any groups, such as a senior center, social or work group, religious-connected group, self-help group, or charity, public service, or community group?

i. No.

ii. Yes
iii. Unknown

(f) About how often do you go to religious meetings or services?

i. Never or almost never
ii. Once or twice a year
iii. Every few months
iv. Once or twice a month
v. Once a week
vi. More than once a week
vii. Unknown

(g) Is there someone available to you whom you can count on to listen to you when you need to talk? If so, how many?

i. None
ii. 1 or 2
iii. 3 to 5
iv. 6 to 9
v. 10 or more
vi. Unknown

(h) Is there someone available to give you good advice about a problem? If so, how many?

i. None
ii. 1 or 2
iii. 3 to 5
iv. 6 to 9
v. 10 or more
vi. Unknown

(i) Is there someone available to you who shows you love and affection? If so, how many?

i. None
ii. 1 or 2
iii. 3 to 5
iv. 6 to 9
v. 10 or more

vi. Unknown

(j) Can you count on anyone to provide you with emotional support (talking over problems or helping you make a difficult decision)? If so, how many?

i. None
ii. 1 or 2
iii. 3 to 5
iv. 6 to 9
v. 10 or more
vi. Unknown

(k) Do you have as much contact as you would like with someone you feel close to, someone in whom you can trust and confide? If so, how many?

i. None
ii. 1 or 2
iii. 3 to 5
iv. 6 to 9
v. 10 or more
vi. Unknown

Module 5: Mental Health and Emotional Well Being

(a) Over the last two weeks: Do you think that you have some mental problems?

i. Yes
ii. No

(b) Over the last two weeks: Do you feel anxious amongst a lot of people?

i. Yes
ii. No

(c) Over the last two weeks: Is your mind in peace?

i. Yes
ii. No

(d) Over the last two weeks: Do you worry over trivial things?

i. Yes
ii. No

(e) Over the last two weeks: Has your tolerability decreased?

i. Yes

ii. No

(f) Over the last two weeks: Does one idea come to your mind again and again?

i. Yes

ii. No

(g) Over the last two weeks: Do you feel lazy?

i. Yes

ii. No

(h) Over the last two weeks: Have you lost your self-confidence?

i. Yes

ii. No

(i) Over the last two weeks: Do you get frightened?

i. Yes

ii. No

(j) Over the last two weeks: Do you feel that your mind is not working?

i. Yes

ii. No

(k) Over the last two weeks: Do you feel that you are being punished for something?

i. Yes

ii. No

(l) Over the last two weeks: Do you sleep well at night?

i. Yes

ii. No

(m) Over the last two weeks: Do you keep on thinking without any purpose all the time?

i. Yes

ii. No

(n) Over the last two weeks: Do you feel that you do not understand anything?

i. Yes

ii. No

Module 6: Status Today – Education

(a) What best describes your Education Status today?

i. Not currently studying
ii. Enrolled in high school
iii. Enrolled in College/University

(b) When did you leave school?

_____

(c) Why did you leave school/institution?

i. Too expensive
ii. Too far away
iii. Poor teaching / behavior
iv. Had to help at home
v. Had to help with work
vi. Parents/elders did not allow
vii. No female teaching staff
viii. No male teaching staff
ix. Someone at home sick/handicapped
x. Not willing
xi. Lack of documents
xii. Education not useful
xiii. Education completed
xiv. Marriage
xv. Service (job)
xvi. Other (specify …….)

(d) Whether you are in school today or not, since covid i.e between 2021 – 2024 (in the last three years) did you need to repeat any class?

i. Yes
ii. No
iii. I was not in school in these three years

(e) Were you in school /institution last year (in October 2023)?

i. Yes

ii. No

(f) Which class did you attend last year (in October 2023)?

i. Class 6
ii. Class 7
iii. Class 8
iv. Class 9
v. Class 10
vi. Polytechnic diploma
vii. FA/F.Sc/I.Com

(g) Did you complete this class (in March 2024)?

i. Yes
ii. No

(h) What is the highest class completed as of today:

i. Class 7
ii. Class 8
iii. Class 9
iv. Class 10
v. Polytechnic diploma
vi. FA/F.Sc/I.Com
vii. Other (Specify)

Module 7: Status Today – Marriage

(a) What best describes your current marital status?
Marital Status:

i. Unmarried / Never Married
ii. Currently Married
iii. Widow / widower
iv. Divorced
v. Engaged/Nikkah solemnised but Rukhsati not taken place

Module 8: Status Today – Employment

(a) What best describes your current employment status?
Employment Status:

i. Employed full-time
ii. Employed part-time
iii. Unemployed, looking for work
iv. Unemployed, not looking for work
v. Self-employed
vi. Housewife
vii. Retired

Module 9: Income related Questions:

(a) What is the total monthly income of your household?

Please include income from all sources before taxes for all members (including yourself) of your household. Select one range that best describes your total household income last month.

i. Nothing
ii. Under PKR 15,000
iii. PKR 15,000 to PKR 20,000
iv. PKR 20,000 to PKR 24,999
v. PKR 25,000 to PKR 29,999
vi. PKR 30,000 to PKR 34,999
vii. PKR 35,000 to PKR 39,999
viii. PKR 40,000 to PKR 44,999
ix. PKR 45,000 to PKR 49,999
x. PKR 50,000 to PKR 59,999
xi. PKR 60,000 to PKR 69,999
xii. PKR 70,000 to PKR 79,999
xiii. PKR 80,000 to PKR 99,999
xiv. PKR 100,000 to PKR 149,999

xv. PKR 150,000 to PKR 199,999

xvi. Above 200,000

xvii. Prefer not to say

(b) What is your own total monthly income?

Please include income from all sources before taxes for yourself only. Select one range that best describes your total income last month.

i. Nothing

ii. Under PKR 15,000

iii. PKR 15,000 to PKR 20,000

iv. PKR 20,000 to PKR 24,999

v. PKR 25,000 to PKR 29,999

vi. PKR 30,000 to PKR 34,999

vii. PKR 35,000 to PKR 39,999

viii. PKR 40,000 to PKR 44,999

ix. PKR 45,000 to PKR 49,999

x. PKR 50,000 to PKR 59,999

xi. PKR 60,000 to PKR 69,999

xii. PKR 70,000 to PKR 79,999

xiii. PKR 80,000 to PKR 99,999

xiv. PKR 100,000 to PKR 149,999

xv. PKR 150,000 to PKR 199,999

xvi. Above 200,000

xvii. Prefer not to say

Module 10: Status of the students in a hypothetical scenario (if COVID did not happen)

(a) Imagine that COVID had not occurred. How would your current educational status look today?
Hypothetical Education Status:

i. Not currently studying

ii. Enrolled in high school

iii. Enrolled in college/university

iv. Other

(b) Imagine that COVID had not occurred. How would your current marital status look today?
Marital Status:

i. Unmarried / Never Married

ii. Currently Married

iii. Widow / widower

iv. Divorced

v. Engaged/Nikkah solemnised but Rukhsati not taken place

(c) Imagine that COVID had not occurred. How would your current employment status look today?
Employment Status:

i. Employed full-time

ii. Employed part-time

iii. Unemployed, looking for work

iv. Unemployed, not looking for work

v. Self-employed

vi. Housewife

vii. Retired

Module 11: Importance of Religion

(a) How important is religion in your life ?

i. Very important

ii. Important

iii. Somewhat important

iv. Not too important

v. Not at all important

Online Appendix: Lost Connections: The Social and Emotional Impacts of Early-Life Mental Health

January 30, 2025

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A. Information on Survey and Variables

Province/District Selection: We select Punjab province for the following reasons. While out of the four provinces of Pakistan, Punjab is the most populous and contributes the largest share of GDP to the national economy,[17] but similar to other provinces also suffers from alarmingly low rates of school enrollments.[18] Additionally, the government of Punjab has recently made an effort to collect education-related statistics (which are not always available for other provinces).

Geographically, we choose the district of Kasur in Punjab[19] because the average level of various development indicators (such as school drop-out rates, monthly income of employed, population involved in agriculture, youth labor market participation and crime rate) in Punjab are closest to those observed in Kasur; therefore, Kasur can be regarded as a close representation of Punjab in many important factors. While various representative dataset available for Pakistan use different stratification strategy, we find many development indicators calculated using the Labor Force Survey or Pakistan Social and Living Standard Measure (PSLM) 2011 to confirm that the statistics for Kasur are closer to the average statistics for Punjab. See, Figures A.1-A.7, which are based on the Labor Force Survey (2015).[20] This exercise confirms that irrespective of the data employed, Kasur is close to Punjab's average development status.

[17] Punjab is home to more than 52% of the population of Pakistan (Census 2017, Pakistan) and contributes more than 57% of Pakistan's GDP

[18] Recently published statistics (Alif Ailaan: Education Survey, 2016) highlight that of the estimated 26 million children in Punjab between the ages of 5 and 16 years, 11.4 million are out of school. Moreover, 5.1 million children are enrolled in government primary schools, but only 3.4 million are enrolled in middle and secondary schools.

[19] Kasur is neighbored by Lahore to the east, Nankana Sahib to the north, Faisalabad to the west and Okara and India to the south.

[20] Some of the averages from PSLM for Kasur and Punjab, respectively are: percentage of population never enrolled: 32.2% and 32.4%; percentage of population involved in cultivation: 33.6% and 34.7%; percentage of population employed: 87% and 83%; wages of working population: PKR 9822 and PKR 9787.

Figure A.1: Dropout 2015

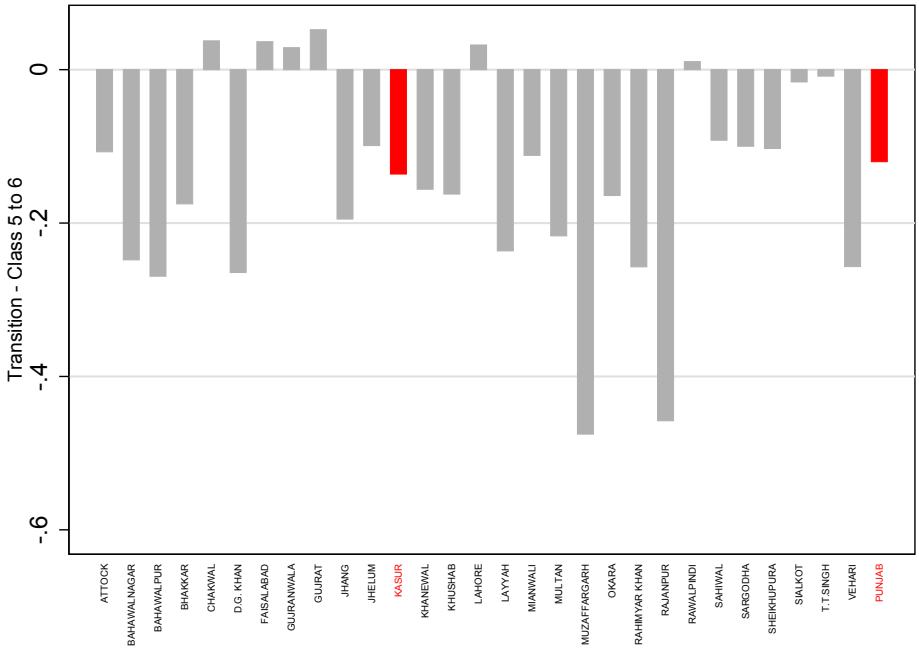

Figure A.2: Real Wage 2015

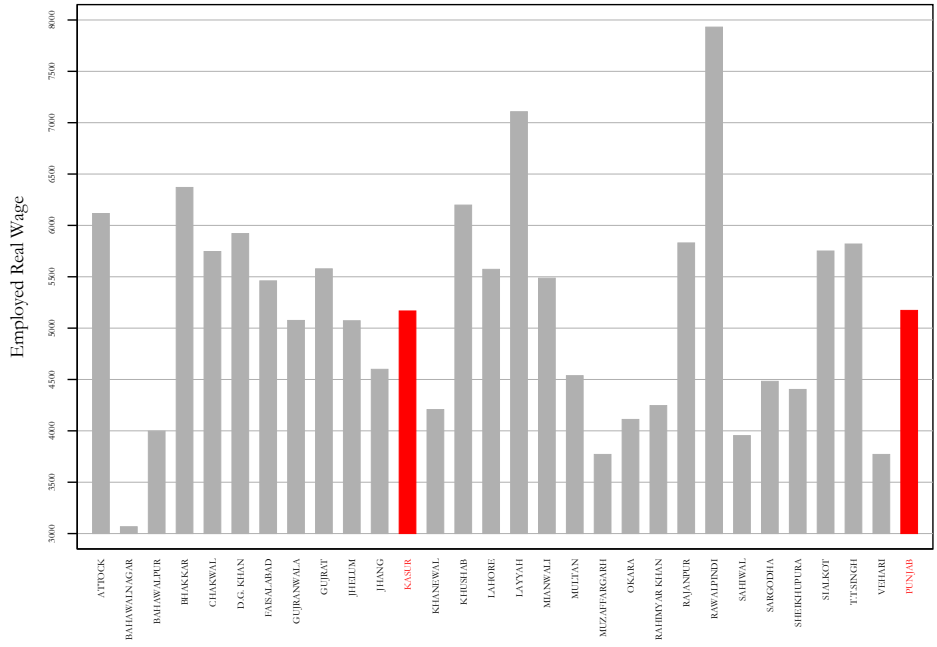

Figure A.3: Employment 2015

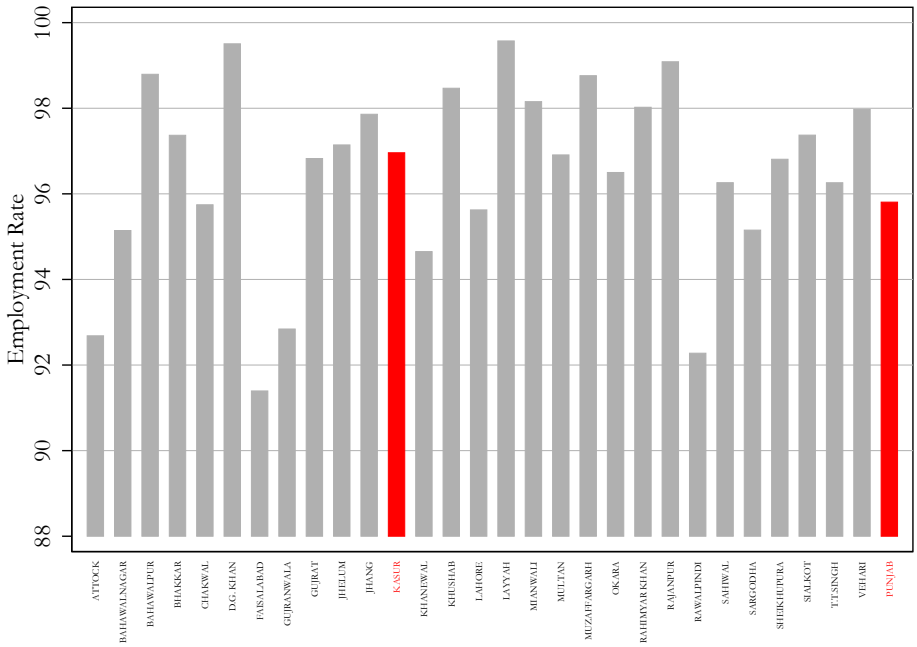

Figure A.4: Employed Population in Cultivation 2015

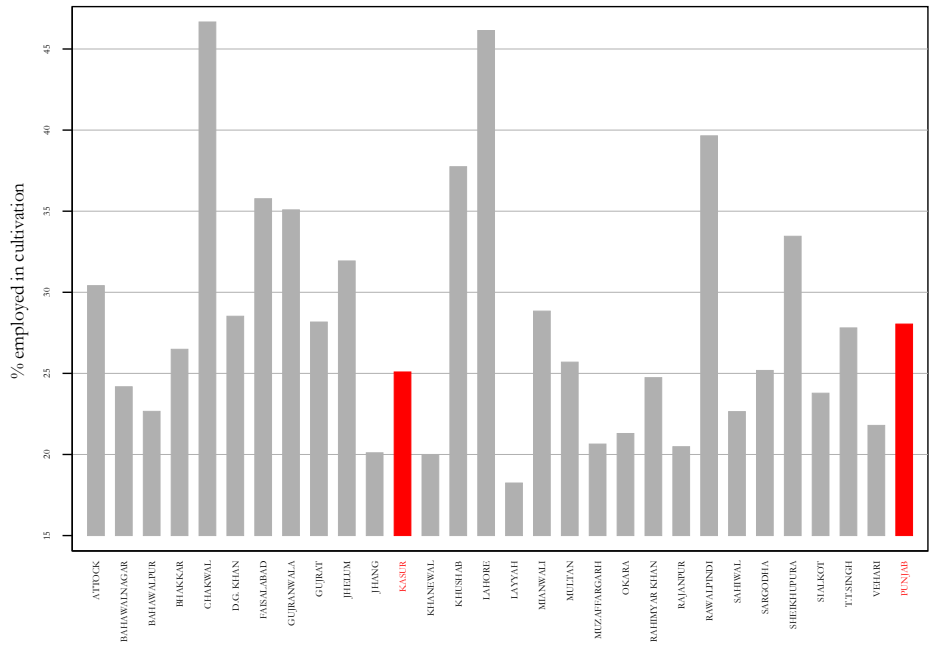

Figure A.5: Female Youth Population Employed 2015

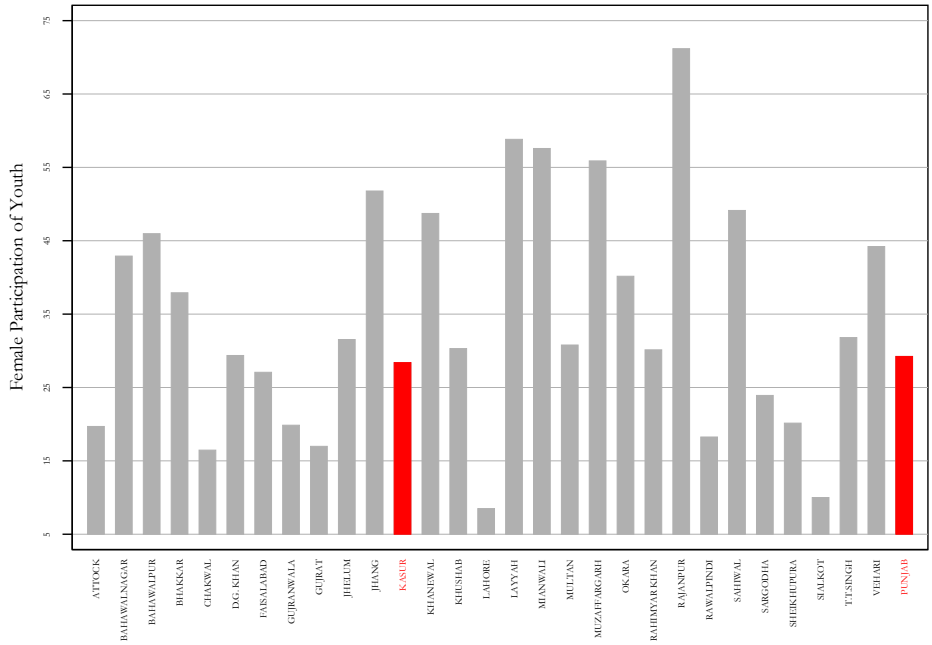

Figure A.6: Male Youth Population Employed 2015

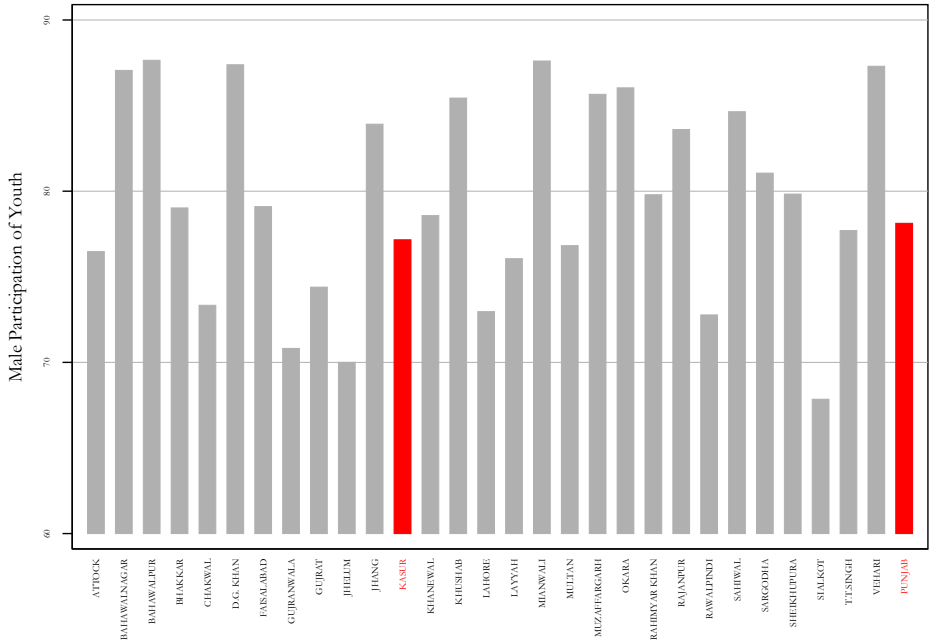

Figure A.7: Crime rate 2015