

Predictors of Immune Fitness and the Alcohol Hangover: Survey Data from UK and Irish Adults

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Abstract: Immune fitness is defined as the capacity of the body to respond to health challenges (such as infections) by activating an appropriate immune response to promote health and prevent and resolve disease, which is essential for improving quality of life. Thus, immune fitness plays an essential role in health, and reduced immune fitness may be an important signal of increased susceptibility for disease. Lifestyle factors such as increased levels of alcohol consumption have been shown to negatively impact immune fitness. The alcohol hangover is the most frequently reported negative consequence of alcohol consumption and is defined as the combination of negative mental and physical symptoms, which can be experienced after a single episode of alcohol consumption, starting when blood alcohol concentration (BAC) approaches zero. Significant correlations have been reported between hangover severity and both immune fitness and biomarkers of systemic inflammation. The concepts of immune fitness and alcohol hangover are further linked by the fact that the inflammatory response to alcohol consumption plays an important role in the pathology of the alcohol hangover. Moreover, immune fitness has been related to the susceptibility of experiencing hangovers per se. It is therefore important to investigate the interrelationship between immune fitness and the alcohol hangover, and to identify possible predictor variables of both constructs. This data descriptor article describes a study that was conducted with adults living in the UK or Ireland, evaluating possible correlates and predictors of immune fitness and the alcohol hangover. Data on mood, personality, mental resilience, pain catastrophizing, and sleep were collected from $n = 1178$ participants through an online survey. Herein, the survey and corresponding dataset are described.

Dataset: The dataset is submitted as a Supplementary File.

Dataset License: CC0.

Keywords: immune fitness; alcohol; hangover; mood; anxiety; personality; mental resilience; pain; sleep; daytime alertness; smoking; quality of life; impaired wound healing

1. Summary

The aim of this study was to further investigate predictors of immune fitness and the alcohol hangover. Immune fitness is defined as the capacity of the body to respond to health challenges (such as infections) by activating an appropriate immune response to promote health and prevent and resolve disease, which are essential functions for improving quality of life [1]. Immune fitness can be self-reported via validated and reliable questionnaires [1]. Adequate immune fitness is essential in health and disease. The annual costs of reduced immune fitness for the Dutch economy in 2019, in terms of absenteeism and presenteeism, were estimated at USD 11.5 billion [2]. An average performance reduction of 22.8% was reported for working on days with reduced immune fitness (presenteeism). Unfortunately, no data are available for the UK, but the Dutch data underline the necessity of maintaining an adequate immune fitness, and the importance of investigating potential correlates that can improve immune fitness. For example, immune fitness and susceptibility to immune-related diseases is influenced by lifestyle factors. Research has shown that maintaining a good physical condition [3], adequate sleep [4], and a healthy daily diet [5] are associated with a better immune fitness.

Another lifestyle factor that has been associated with immune fitness is alcohol consumption. Research has revealed that increased alcohol consumption is associated with poorer immune fitness [6]. The hangover is the most frequently reported negative consequence of alcohol consumption and is defined as the combination of negative mental and physical symptoms which can be experienced after a single episode of alcohol consumption, starting when blood alcohol concentration (BAC) approaches zero [7]. Alcohol hangover can have a significant negative effect on the performance of daily activities such as driving a car [8]. In addition, a survey among $n = 3399$ people in employment found that the annual costs of alcohol intoxication and hangovers at the workplace for the UK economy equaled USD 5.1 billion [9].

Research on the pathology of the alcohol hangover revealed clear interconnections between immune fitness and alcohol hangover. That is, studies comparing the effects of an evening of alcohol consumption with those of an alcohol-free evening demonstrated an inflammatory response due to alcohol consumption, resulting in significant increases of biomarkers of systemic inflammation such as cytokines and c-reactive protein [10,11]. These experimental studies in young adult social drinkers revealed significant correlations between these biomarker concentrations in blood and saliva with hangover severity [10,11]. In addition, significant correlations were found between hangover severity and immune fitness [12].

It is important to further investigate predictors of immune fitness and predictors of the presence and severity of the alcohol hangover, given the significant consequences for health and society. The current study focused specifically on baseline (non-hangover state) mood, personality, mental resilience, pain catastrophizing, and sleep. These topics were selected because the available research on a topic is limited or absent, or the available studies provided inconclusive results, or a combination of these.

1.1. Mood

Previous research has shown that negative mood is associated with poorer immune fitness [6,13]. However, no relevant relationship was found between baseline mood and hangover sensitivity [14] or hangover severity [15]. For replication purposes, in the current study, some of the single-item mood ratings that were evaluated previously were reassessed (i.e., stress, anxiety, depression, fatigue, loneliness, hostility, and happiness) [6,13] and new constructs were added (i.e., worry, shyness, and impulsivity) that have not been previously investigated.

In addition, the General Anxiety Disorder-7 (GAD-7) questionnaire [16] and the anxiety sensitivity scale of the Substance Use Risk Profile Scale (SURPS) [17] (to assess general anxiety and fear of arousal-related sensations, respectively) were added to the current survey to evaluate possible relationships with baseline anxiety-related constructs in greater detail. For example, given the presence of arousal-related sensations in alcohol hangover, anxiety sensitivity may be associated with hangover susceptibility and/or severity, or it may positively moderate an association between general anxiety and alcohol hangover susceptibility and/or severity.

1.2. Personality

There are currently no data published on whether personality has an impact on immune fitness. Therefore, personality was further investigated in the current study, using the Big 5 personality model (neuroticism, extraversion, openness, conscientiousness, and agreeableness) [18]. With respect to alcohol hangover, there is a paucity of data suggesting a relationship between hangover severity and personality [19–21]. However, existing studies have methodological shortcomings that may have biased these findings [22]. A recent study failed to find a relationship between hangover severity and personality [22]. These inconclusive results underline the need for further research.

1.3. Mental Resilience

Mental resilience refers to the ability to bounce back, i.e., the ability to cope with problems and life events. Positive associations between immune fitness and mental resilience have been consistently reported [23]. In contrast, most research found that mental resilience is not related to hangover severity or hangover sensitivity [22,24,25]. Thus, having hangovers is not caused by a lack of ability to bounce back. One study did report a significant relationship [20], but methodological shortcomings may account for this observation. In the current study, mental resilience was reassessed using the Brief Resilience Scale [26] and the Connor–Davidson Resilience Scale 2 (CD-RISC 2) [27].

1.4. Pain Catastrophizing

Pain catastrophizing refers to what extent individuals exaggerate the pain they experience. Pain catastrophizing can include different components, including rumination, magnification, and helplessness. There are currently no published data on how pain catastrophizing may be related to immune fitness. However, this is worthwhile to investigate, as pain is a central characteristic of many disease states, and related psychological concepts such as rumination and helplessness (two components of the pain catastrophizing construct) are known to negatively impact general health [28,29]. Therefore, pain catastrophizing was assessed in the current study. Previous studies found small but significant correlations between pain catastrophizing and hangover severity [30,31], particularly for the rumination component of pain catastrophizing.

1.5. Sleep

With respect to sleep, insomnia has been associated with poorer immune fitness [32], and significant negative correlations have been found between sleep quality and immune fitness. In addition, reduced immune fitness has been associated with increased daytime sleepiness and fatigue [13]. With respect to the alcohol hangover, significantly poorer sleep was reported after the drinking occasion compared to an alcohol-free night [33–39]. Unfortunately, only three of these studies reported the relationship between sleep quality and hangover severity the next day. Two studies reported no significant correlation between sleep quality and hangover severity [37,38]. However, another study [39] did find significant correlations between hangover severity and the number of nightly awakenings, sleep quality, and total sleep time. Increased levels of daytime sleepiness and fatigue are frequently reported during the hangover state [33–39].

Given the inconclusive findings on the relationship between hangover severity and sleep quality, assessments of insomnia and daytime sleepiness were included in the current study. In addition, the expected large sample size allows for evaluation of potential sex differences. In previous studies, these have not yet been investigated. However, sex differences have been reported for both immune fitness [40] and sleep quality [41], in that women usually report poorer immune fitness and better sleep quality than men. It is of interest to evaluate whether these differences influence the associations between sleep quality, immune fitness, and hangover severity.

2. Data Description

This data descriptor article describes the cross-sectional survey and associated dataset. Several publications based on the collected data are currently in preparation. Other researchers may benefit from the description of the study methodology and survey content, as it may help them with the development of future surveys. In addition, the dataset can be used by other researchers for additional analyses.

2.1. Informed Consent

Before the start of the survey, participants viewed a page comprising background information on the purpose of the study, inclusion criteria, and the expected duration of completing the survey. Information was provided on data protection, and on how to contact the researchers in case of questions or comments. To start the survey, participants gave electronic informed consent. Those who agreed to participate in the study received a unique participant identification number. In the dataset, this number is labeled as *Subject_ID*, and listed in column 1.

2.2. Demographic Data

The first question (column 2 of the dataset) asked the participant's age (in years). The second question (column 3 of the dataset) asked about the participant's sex at birth (male or female). The third and fourth questions asked about the participant's body weight in kg and height in meters (columns 4 and 5 of the dataset, respectively).

2.3. Past Year's Immune Status

Past year's immune status (Section 3 of the survey) was assessed with the Immune Status Questionnaire (ISQ) [42]. The 7-item ISQ assessed the immune status of participants for the 12 months preceding completion of the survey. The ISQ items comprise common cold, diarrhea, sudden high fever, headache, muscle and joint pain, skin problems (e.g., acne and eczema), and coughing. On a 5-point Likert scale, participants indicated how frequently they had experienced each symptom. They could choose between the answers

never (score 0), sometimes (score 1), regularly (score 2), often (score 3), and (almost) always (score 4). The raw scores of the ISQ items are listed in columns 6 to 12 of the dataset. The sum score of the items is recoded as follows: $\geq 15 = 0$, $14 = 1$, $13 = 2$, 11 or $12 = 3$, $10 = 4$, 8 or $9 = 5$, $7 = 6$, $6 = 7$, $5 = 8$, 3 or $4 = 9$, and $\leq 2 = 10$. Column 13 lists the (recoded) overall ISQ score, ranging from 0 (poor) to 10 (excellent) [42]. The ISQ has been validated in various languages [42,43], has a Cronbach's alpha ranging from 0.632 to 0.88 [42,43], and a test–retest reliability of 0.80 [42]. The ISQ was extended with two additional items, assessing whether participants experienced slowly healing wounds and/or wound infection. In the dataset, the outcomes for these items are listed in columns 14 and 15.

2.4. Past Month's Immune Fitness

Past month's immune fitness (Section 4 of the survey) was assessed with a single-item scale ranging from 0 (poor) to 10 (excellent) [1,44,45]. To aid participants, immune fitness was defined as 'the capacity of the body to respond to health challenges (such as infections and/or fever) by activating an appropriate immune response in order to promote health and prevent and resolve disease, which is essential for improving quality of life'. In the dataset, past month's immune fitness is listed in column 16.

2.5. Insomnia and Sleep

Insomnia (Section 5 of the survey) was assessed with the 9-item insomnia subscale of the SLEEP-50 questionnaire [46]. The insomnia subscale was completed for past month's sleep. Items could be scored on a 4-point scale, including the response options not at all (score 1), somewhat (score 2), rather much (score 3), and very much (score 4). In the dataset, the scores of the items are listed in columns 17 to 25. The sum score of items represents the overall insomnia score (listed in the dataset in column 26), with higher scores representing poorer sleep. An overall insomnia score ≥ 19 can be used as the cut-off value for a positive screen on insomnia (sensitivity = 71%, specificity = 75%) [46]. Participants further reported their overall sleep quality on a scale ranging from 0 (very bad) to 10 (very good), average total sleep time, and the number of nightly awakenings. In the dataset, the outcomes of these assessments are listed in columns 27 to 29.

2.6. Daytime Sleepiness

Daytime sleepiness (Section 6 of the survey) was assessed with the Karolinska Sleepiness Scale (KSS) [47]. The KSS was completed for the past month, and participants were asked to rate their average daytime sleepiness for non-hangover days. They had to choose one of nine statements, ranging from 'extremely alert' (score of 1) to 'very sleepy, great effort to stay awake, fighting sleep' (score of 9). In the dataset, the KSS score is listed in column 30.

2.7. Mood

Section 7 of the survey assessed mood for the past month. The 10 items included stress, anxiety, depression, worry, shyness, fatigue, loneliness, hostility, impulsivity, and happiness. Single-item rating scales were used to assess these mood items, on a scale ranging from 0 (absent) to 10 (extreme) [44,45]. In the dataset, scores on the single-item mood items are listed in columns 31 to 40.

2.8. Anxiety

Section 8 of the survey evaluated baseline anxiety in more detail. Firstly, the 5-item anxiety sensitivity scale of the Substance Use Risk Profile Scale (SURPS) was completed [17]. The items comprise statements about the tendency to be fearful of arousal-related sensations that can be rated as strongly disagree (score 1), disagree (score 2), agree (score

3), or strongly agree (score 4). In the dataset, the items are listed in column 41 to 45. The sum score of the items was computed and is listed in the dataset in column 46. Secondly, baseline anxiety severity was evaluated with the General Anxiety Disorder-7 questionnaire (GAD-7) [16]. The GAD-7 questionnaire comprises 7 items and was completed for the past 2 weeks. Items can be scored as not at all (score 0), several days (score 1), more than half the days (score 2), or nearly every day (score 3). In the dataset, the GAD-7 items are listed in columns 47 to 53. Higher sum scores (listed in column 54 of the dataset) represent greater anxiety severity. For the interpretation of the outcome, cutoff scores for the GAD-7 have been established and participants can be allocated to groups representing minimal anxiety (a score of 0 to 4), mild anxiety (a score of 5 to 9), moderate anxiety (a score of 10 to 14), or severe anxiety (a score of 15 to 21). Finally, it was asked to what extent positive scores on one or more GAD-7 items problems made it difficult for participants to do their work, take care of things at home, or get along with other people. Answer options included not difficult at all (score 0), somewhat difficult (score 1), very difficult (score 2), or extremely difficult (score 3). In the dataset, the outcome of this question is listed in column 55.

2.9. Personality

In Section 9 of the survey, personality was investigated with the 10-item short version of the Big Five Inventory (BFI-10) [18]. Items have 5 response options, including disagree strongly, disagree a little, neither agree nor disagree, agree a little, or agree strongly. Scores range from 1 to 5, with items 1, 3, 4, 5, and 7 reverse-scored. In the dataset, the 10 items are listed in column 56 to 65. The BFI-10 has five 2-item subscales: neuroticism, extraversion, openness, conscientiousness, and agreeableness. In the dataset, the outcomes for these subscales are listed in columns 66 to 70.

2.10. Mental Resilience

Mental resilience was assessed with two different scales (Section 10 of the survey). First, the Brief Resilience Scale (BRS) was completed [26]. The 6-item BRS comprises statements on the ability to recover from stress, i.e., the ability to bounce back. The items can be endorsed on 5-point Likert scales that range from strongly disagree to strongly agree (score 1 to 5, with reversed-scoring applied to items 2, 4, and 6). A higher BRS sum score indicates better mental resilience, i.e., a faster recovery from stress. Cronbach's alpha of the BRS ranges from 0.80 to 0.91 [26]. In the dataset, the BRS items are listed in column 71 to 76, and the sum score is listed in column 77. Second, mental resilience was also assessed with the Connor–Davidson Resilience Scale 2 (CD-RISC 2) [27]. The 2 items have 5 answering options, including not true at all (score 0), rarely true (score 1), sometimes true (score 2), often true (score 3), and true nearly all the time (score 4). The sum score ranges from 0 to 8, with a higher score suggesting a greater ability to bounce back. In the dataset, the 2 items and sum score are listed in column 78 to 80.

2.11. Pain Catastrophizing

The 3-item short-form Pain Catastrophizing Scale (PCQ) [48] was completed to assess to what extent participants recall pain experiences in more exaggerated terms, feel helpless when experiencing pain, and/or ruminate over painful events (Section 11 of the survey). The 3 items evaluate the pain catastrophizing domains of rumination, magnification, and helplessness for the past month. There are 5 answering options for the items, ranging from 'not at all' (score 1) to 'always' (score 5). In addition to the individual item scores, a sum score can be calculated, representing overall pain catastrophizing. Higher scores correspond to greater pain catastrophizing, and a sum score ≥ 8 is considered clinically relevant. Previous research revealed a Cronbach's alpha of 0.892 for the shortened PCS [48].

In the dataset, rumination, magnification, and helplessness are listed in columns 81 to 83, and overall pain catastrophizing in column 84.

2.12. *Quality of Life*

Section 12 of the survey assessed quality of life. A single-item scale, ranging from 0 (very poor) to 10 (excellent), was used to assess past month's quality of life [49]. In the dataset, quality of life is listed in column 85.

2.13. *Smoking Tobacco*

Section 13 of the survey assessed tobacco smoking behavior. Participants were asked how many days per week they smoke (answer possibilities 0 to 7 days), and on average how many cigarettes they smoke per day. In the dataset, the outcomes are listed in columns 86 and 87.

2.14. *Alcohol Consumption and Hangovers*

Section 14 of the survey asked whether participants consume alcohol at the moment of survey completion. In the dataset, the answer to this yes/no question is listed in column 88. If they had not consumed alcohol, the following questions on alcohol consumption and hangovers (Sections 15 to 17) were skipped. Section 15 of the survey asked the age of participants when they first consumed alcohol, and Section 16 asked the age at which they regularly consumed alcohol. In the dataset, the answers to question 17 and 18 are listed in columns 89 and 90. Section 17 of the survey concerned past month's alcohol consumption. Participants reported the average number of alcoholic drinks they consumed per week (answer possibilities 0 to >100) and the number of days per week they consumed alcohol (answer possibilities 0 to 7 days). Information was given on serving size. Participants were asked to convert the consumed beverages into standard alcoholic drink sizes (units). One unit equaled one glass of beer (250 mL), one glass of wine, or one shot of liquor. One bottle of wine (750 mL) comprised 6 units of alcohol and one bottle of liquor (750 mL) equaled 20 units. In the dataset, the number of alcoholic drinks (units) consumed per week are listed in column 91, and the number of days of alcohol consumption per week is listed in column 92. For the heaviest drinking occasion in the past month, participants reported the number of alcoholic drinks consumed and how many hours they consumed alcohol. In the dataset, the outcomes are listed in columns 93 and 94, respectively. Subjective intoxication for this past month's heaviest drinking occasion ('How drunk did you feel?') was rated on a scale ranging from 0 (absent) to 10 (extreme) [50]. In the dataset, the subjective intoxication rating is listed in column 95. Next-day hangover severity for the day following this past month's heaviest drinking occasion was rated on a scale ranging from 0 (absent) to 10 (extreme) [51]. In the dataset, hangover severity is listed in column 96. Finally, participants reported the number of hangovers they experienced during the past month (answering options from 0 to 31 days). In the dataset, hangover frequency is reported in column 97.

2.15. *Sleep After Past Month's Heaviest Drinking Occasion*

Section 18 of the survey concerned sleep after the past month's heaviest drinking occasion. Participants reported their total sleep time, and sleep quality was rated on a scale ranging from 0 (very poor) to 10 (excellent). The number of nightly awakenings was also recorded. In the dataset, these outcomes are listed in column 98 to 100. Daytime alertness on the hangover day (Section 19 of the survey) was assessed with the KSS (see Section 2.6 for a description). In the dataset, the outcome is listed in column 101.

2.16. Mood During the Past Month's Heaviest Drinking Occasion and the Next Day

Section 20 of the survey concerned mood during the past month's heaviest drinking occasion, and the next day hangover. The 10 mood items described in Section 2.7 were assessed. In the dataset, the mood outcomes are listed in column 102 to 111.

3. Methods

The survey was conducted online between 21 February 2024 and 31 July 2024. Potential participants were recruited via advertisement on The Open University's participant pool management software (SONA systems, <https://www.sona-systems.com>) and were UK or Irish adults of the general population 18 years and older, participating in a psychology course at The Open University. The study was reviewed and approved by The Open University Human Research Ethics Committee, HREC (approval code: HREC/4628, date of approval: 15 December 2023). Electronic informed consent was provided by all participants. The study was conducted in accordance with the Declaration of Helsinki of 1975 (<https://www.wma.net/policies-post/wma-declaration-of-helsinki/> accessed on 30 March 2025), revised in 2008. Participants were not financially compensated for participation, but those who completed the survey were awarded one module credit, and could enter a prize draw to win one of three GBP 20 Amazon vouchers.

3.1. Participants and Sample Size

People could participate in the study if they were at least 18 years old. There were no exclusion criteria. However, participants were excluded from the final dataset if they only provided demographics (i.e., they stopped before answering question 6), provided incomplete demographics, or in case the data was judged as unreliable. To check for reliability of answers, alcohol outcomes were evaluated. First, participants who reported more hangover days per month than drinking days were excluded. Second, the age of first and regular alcohol use was compared, and participants were excluded if the age of regular alcohol consumption was younger than the age of first use. In addition, participants with extreme demographics (i.e., a height below 1.40 m or weight below 40 kg) were excluded, as it is very unlikely that these reported values are correct (more than 6 standard deviations shorter than the UK population average for height, and more than 3 standard deviations less than the UK population average for weight) [52]. Although no power analysis was conducted for this study, the goal was to achieve a sufficient sample size that allows comparisons of subgroups (e.g., males versus females). Therefore, it was planned to recruit participants until at least $n = 1000$ individuals had completed the survey.

3.2. Data Collection

Participants were recruited through The Open University's recruitment software to complete the survey. The survey was conducted using Qualtrics software (Qualtrics, Provo, UT, USA, version May 2023). The survey was conducted in the English language. On average, 95% of participants completed the survey within 15 min.

3.3. Fraud Protection

To protect against fraudulent bot responses, participants were required to answer two verification items before starting the survey. These included Google's V2 reCAPTCHA Turing test which presented as either a simple 'I am not a robot' tick box or an image challenge depending on the participant's data. Participants were then required to enter a valid Open University email address. In line with Qualtrics Fraud Detection recommendations [53], RelevantID antifraud technologies were also embedded into the

survey. Additionally, responses were restricted to IP addresses located within the UK and Ireland only.

3.4. Data Handling

The raw data were downloaded in an Excel format. If necessary, data were recoded and scale and subscale scores were computed. Statistical analyses were conducted with SPSS (IBM Corp. Released 2013. IBM SPSS Statistics for Windows, Version 29.0. Armonk, NY, USA: IBM Corp.). The survey had a total of $n = 1256$ entries. All participants provided informed consent to start the survey. Data from participants were excluded from the final dataset if they only answered (some of the) questions on demographics ($n = 56$), or stopped the survey after the demographic questions ($n = 1$). In addition, data of $n = 3$ participants were excluded since their data were judged as unreliable. Reliability checks included 'reported having their first drinking occasion after their regular drinking age' ($n = 0$ excluded), and 'reporting more monthly number of hangovers than the number of drinking days' ($n = 3$ excluded). Finally, data of $n = 18$ participants were excluded because they reported a height below 1.40 m. None of the participants were younger than 18 years old, and none reported a bodyweight below 40 kg. $n = 1178$ participants are included in the final dataset. The dataset is attached as Supplementary Materials. An overview of the survey sections and the corresponding completion rate is given in Table 1.

Table 1. Number of participants that completed each section of the survey.

Section	Assessed Variables	Items	Completers
1	Participant ID	1	1178
2	Demographics	2	1178
3	ISQ	7 (+2)	1178
4	Immune fitness	1	1177
5	Insomnia (other sleep questions)	9 (+4)	1175 (1161–1175)
6	Daytime sleepiness	1	1174
7	Mood	10	1174
8	Anxiety (SURPS + GAD-7)	12	1172
9	Personality (BFI-10)	10	1170
10	Mental resilience (BRS + CD-RISC 2)	8	1169 + 1113
11	Pain catastrophizing (PCS)	3	1168
12	Quality of life	1	1168
13	Smoking tobacco	2	1168
14	Alcohol consumption	1	1168
15	Age first alcohol	1	785
16	Age regular drinking	1	847
17	Past month's alcohol consumption	7	850–853
18	Sleep–HDO	4	848–851
19	Daytime sleepiness–HDO	1	851
20	Mood–HDO	20	849

Number of completers are listed per section. Abbreviations: ISQ = immune status questionnaire, HDO = past month's heaviest drinking occasion, SURPS = Substance Use Risk Profile Scale, GAD-7 = General Anxiety Disorder-7 questionnaire, BFI-10 = Big Five Inventory 10 item Scale, BRS = Brief Resilience Scale, CD-RISC 2 = Connor-Davidson Resilience Scale 2, PCS = Pain Catastrophizing Scale.

4. User Notes

The dataset is available as an SPSS .sav file as a Supplementary File to this manuscript. The variables are listed in the column 'Name', and a description is given in the 'label' column. If questions had multiple answers to choose from, these are listed in the column 'Values'. Not all participants completed the full survey. Data cells were left empty within the dataset in the case of missing data (e.g., skipped questions, or in the case of surveys that were stopped before completion).

5. Strengths and Limitations of the Dataset

Strengths of the dataset include its large sample size, and the inclusion of both males and females. The age range of participants allows analyses according to age groups. A sample size greater than $n = 1000$ is considered sufficient for surveys to have reliable outcomes, with an error margin smaller than $\pm 3\%$ [54]. The survey comprised validated and reliable scales to assess alcohol hangover, immune fitness, and its health correlates. Nevertheless, all collected data were self-reported, which can be viewed as a limitation and risk of bias. Limitations of the dataset include that the data were collected retrospectively, introducing the possibility of recall bias. The data were collected among students of the Open University. Therefore, the final dataset is not representative of the total UK or Irish population. First, participants were invited if they took part in psychology courses at the Open University. Often, these comprise females, which was reflected in the obtained sample (85.7% females). Further, the final dataset comprised $n = 1178$ adults with a mean (SD) age of 33.7 (10.9) years old. The age range was 18 to 71 years old, which is much broader than usual student samples with a narrow age range (e.g., 18 to 25 years old). The broader age range is due to the fact that at the Open University, many adults of various age groups follow part-time courses next to a regular job. As in the current sample, these can also comprise older adults. Although these sample characteristics limit generalizability to the overall UK and Irish population, the obtained sample is very suitable for the planned correlational and regression analyses to identify predictors of immune fitness and hangover severity.

Supplementary Materials: The following supporting information can be downloaded at: <https://www.mdpi.com/article/10.3390/data10040049/s1>, dataset.

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Institutional Review Board Statement: These studies were conducted in accordance with the Declaration of Helsinki and approved by The Open University Human Research Ethics Committee, HREC (approval code: HREC/4628, date of approval: 20 March 2023).

Informed Consent Statement: Electronic informed consent was obtained from all participants involved in this study.

Data Availability Statement: The data are available as Supplementary Materials. The dataset is licensed under CC0, which means that it is open data, free for anyone to use, reuse, and distribute for both commercial and non-commercial purposes. In the event of using the dataset, it would be appreciated if the current data descriptor article is cited.

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