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ABSTRACT

Background: There is growing evidence for recent declines in adolescent alcohol use in the Western world. While these changes have been subject to scientific debate, the reasons for this downward trend are not yet understood.

Method: We consider broader theoretical framings that might be useful in understanding declines in youth drinking. In particular, we reflect on the historical observations of ‘long waves of alcohol consumption’, the ‘Total Consumption Model’ (Skog, 1985), and the ‘Theory of Social Generations’ (Mannheim, 1952). Based on this, we explore some of the main hypotheses that are presently discussed as possible explanations for changes in youth drinking.

Results: We suggest there may have been a change in the social position of alcohol as a social reaction to the negative effects of alcohol, but also emphasize the importance of changes in technology, social norms, family relationships and gender identity, as well as trends in health, fitness, wellbeing and lifestyle behaviour. As a result of the interplay of these factors, the ‘devaluation’ of alcohol and the use of it may have contributed to the decrease in youth drinking.

Conclusions: For interrupting the recurrent cycle of the ‘long waves of alcohol consumption’, we need to take advantage of the present change in sentiment and “lock in” these changes by new control measures. The model of change presented here hinges on the assumption that the observed change in the position the present young generation takes on alcohol proceeds through the life course, eventually reducing alcohol use in the whole population.

1 Recent changes in adolescent alcohol use

Survey research among adolescents provides convincing evidence for declining alcohol use in the majority of high-income countries of the Western World in recent years. Between 2002 and 2010, past week alcohol consumption among 11-, 13- and 15-year old adolescents participating in the Health Behaviour in School-Aged Children (HBSC) study in Europe, Canada and the U.S. declined in 20 of 28 countries (de Looze et al., 2015). Based on a larger observation period from 1995 to 2015, results from the European School Survey Project on Alcohol and Other Drugs (ESPAD) showed decreasing rates in current (last 30 days) alcohol use and heavy episodic drinking in the majority of countries (ESPAD Group, 2016; Kraus et al., 2018). In the UK, the proportion of 11- to 15-year-olds who consumed alcohol in the last week declined from 40% in 2004 to 23% in 2014, and the average number of units consumed by those who consumed alcohol in the last week fell from 13 units in 2007 to 10 units in 2016 (Bhattacharya, 2016). Alcohol use among 14- to 18-year-olds in the U.S. continued to show significant declines, reaching its lowest levels in the history of the study by falling from 69% in 1997 to 45% in 2015 (Johnston, O'Malley, Miech, Bachman, & Schulenberg, 2016). Similarly, the Australian Secondary School Alcohol and Drug survey reported reductions in lifetime consumption among 12- to 17-year-olds between 2002 and 2014 from 73% to 68%, in past month drinking from 50% to 25%, and in recent drinking (past seven days) from 34% to 15% (White & Williams, 2016). The changes were consistent across regions, income and social groups (Livingston, 2014). Likewise, the prevalence of episodic heavy drinking among secondary school students in New Zealand decreased between 2001 and 2012 from 40% to 23% (Clark et al., 2013).

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3 These changes in youth drinking may be interpreted as part of a general trend of declining
4 alcohol consumption in most high-income countries. Against the backdrop of a worldwide
5 increase in recorded per capita consumption (from 4 litres of pure alcohol in 1961 to 5.0 l in
6 2010), Europe (excluding Belarus, Moldova, Ukraine and Russia) experienced the greatest
7 decline, from an average of 12 l of pure alcohol in 1965 to 9 l in 2010 (Monteiro, Rehm,
8 Shield, & Stockwell, 2015). The decrease in youth drinking, however, has been found to be
9 considerably greater than the decline in the general population, igniting a debate on youth-
10 specific changes in consumption. Separating age, period and cohort effects on long term
11 population-based trends in alcohol use over the past 10-20 years, several studies revealed
12 that the observed changes in alcohol consumption over time in the drinking-age population
13 could be attributed to reduced consumption and increased abstinence rates among the most
14 recent birth cohorts. These cohort effects were reported for Sweden (Kraus, Tinghög, Lindell,
15 Pabst, Piontek, & Room, 2015), Great Britain (Meng, Holmes, Hill-McManus, Brennan, &
16 Meier, 2014), the US (Kerr, Greenfield, Ye, Bond, & Rehm, 2013), and most recently Australia
17 (Livingston, Raninen, Slade, Swift, Lloyd, & Dietze, 2016).

2 Explaining changes in level of drinking

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45 Past changes in alcohol use behaviour in populations have been subject to scientific debate
46 by empirical investigation, by interpretation of information from various well-based sources,
47 or by formulating hypotheses on the plausibility of possible driving forces that may or may
48 not have caused change. For instance, the declining trends in alcohol consumption in the
49 U.S. and many European countries at various times during the second half of the 19th
50 century and early 20th century were explained by the birth of industrial capitalism; alcoholic
51 beverages were among the earliest industrial products, with cheap and wide availability
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3 facilitating steep rises in consumption (Nicholls, 2009: pp. 34-36). But on the other hand,
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5 extensive alcohol use affected the productivity of the workers and created the need to
6
7 discipline the working class (Mäkelä, Room, Single, Sulkunen, & Walsh, 1981). This meant
8
9 industrialists joined a bottom-up temperance movement to push for restriction or
10
11 elimination of the alcohol market (e.g., Rosenzweig, 1985). Others attributed the increasing
12
13 trends in per capita consumption in the Western world between 1950 and 1975 to new
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15 groups entering the drinking population such as women, teenagers, rural residents and
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17 immigrants, and the diversification of drinking practices as alcohol changed from a specific
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19 commodity to a customary item and drinking was integrated with a growing number of daily
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21 routines and activities (Mäkelä et al., 1981).
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30 More recently, experimental and epidemiological studies suggest that measures of formal
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32 control can significantly influence alcohol use and reduce the burden of alcohol-related harm
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34 (Babor et al., 2010). However, drinking appears to be influenced at least as much by cultural
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36 and social processes (Room, Österberg, Ramstedt, & Rehm, 2009). Among the many factors
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38 that have been identified are changes in the demographic and ethnic composition of the
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40 population, changes in attitudes, beliefs, values or risk perceptions, or changes in lifestyle
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42 behaviour (e.g., Room et al., 2009, Pennay, Livingston, & MacLean, 2015).
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50 In light of the growing descriptive data on decreasing trends in alcohol use among
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52 adolescents, this paper discusses possible reasons for these changes. Lacking appropriate
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54 methods to analyse all possible factors that may influence long-term changes in alcohol
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56 consumption (Pennay, Holmes, Törrönen, Livingston, Kraus, & Room, 2018), we will take a
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58 more global view on the available findings. As the trend in adolescent alcohol use does not
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3 coincide with the overall population trend in many countries, specific explanations are
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5 required that go beyond those generally used to explain population-level changes. For
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7 instance, increasing alcohol prices, restricting outlet numbers and trading hours, better
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9 enforcement of the legal purchasing age, and adopting more restrictive alcohol control
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11 policies overall have been empirically tested and reported to be effective in reducing alcohol
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13 use and its associated harms (Babor et al., 2010; Toumbourou, Stockwell, Neighbors,
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15 Marlatt, Sturge, & Rehm, 2007; Wagenaar, Salois, & Komro, 2009). While these measures –
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17 with the exception of the enforcement of legal purchasing age – are mainly directed toward
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19 adults, they also seem to affect youth drinking (Bendtsen et al., 2014; Gilligan, Kuntsche, &
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21 Gmel, 2012). However, with most regulations reducing availability and affordability of
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23 alcohol in European countries having been implemented prior to the period in which youth
24
25 drinking has declined, the evidence for such measures causing that decline is weak (Kraus et
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27 al., 2018; for Finland see Raitasalo, Simonen, Tigerstedt, Mäkelä, & Tapanainen, 2018; for
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29 Australia see Pennay et al., 2015).

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40 Unfortunately, evaluation research tends to focus on short-term effects, and much less is
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42 known about how policy effects develop or evolve in the long-term, or interact with other
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44 policies and societal shifts to contribute to consumption trends. For instance, formal policy
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46 measures such as checking proof of age identification or regulations targeting minors in
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48 alcohol marketing, even if implemented long before the observed decline in youth drinking,
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50 may work via other mechanisms. Despite substantial tax reductions in Finland, students
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52 rated perceived access to alcoholic beverages as increasingly difficult between 1999 and
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54 2015 (Raitasalo et al., 2018). Based on evidence that peers are the main suppliers of alcohol
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56 among underage youth (Paschall, Grube, Black, & Ringwalt, 2007), the authors hypothesised
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3 that an overall devaluation of alcohol in this age group reduced the availability of alcoholic
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5 beverages (Holmila, Karlsson, & Warpenius, 2010).
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10 Thus, rather than following the usual path of finding single externalities that might have
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12 impacted on individual drinking and eventually on youth as a collectivity, we focus on the
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14 social position of alcohol among youth and the factors that may have particularly
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16 contributed to the ‘devaluation of alcohol’ in this group. Basing our understanding on
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18 possible driving forces of change on theoretical ground, we will explore what we can learn
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20 from the long historical trends in drinking cultures, and focus on models of change from the
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22 perspective of the collective and the individual.
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30 **3 Change in alcohol consumption from a historical and theoretical** 31 32 **perspective** 33 34

35 There have been two major models of big changes in alcohol consumption levels in a
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37 population. Neither of these models have pointed to change specifically in a particular age
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39 group, though they can be expected to include that element. We then consider a third
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41 model from general sociology, which does focus on the influence of a particular birth cohort
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43 on social change.
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50 **3.1 The long waves of alcohol consumption** 51

52 Scholars described the development in large parts of the Western world between the middle
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54 of the 19th century and the 1980s as “the long waves of alcohol consumption” with a
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56 general decreasing trend until the period between the two world wars and an increase after
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58 World War II until the mid-1970s (Mäkelä et al., 1981; Sulkunen, 1976). Some of these
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3 changes were attributed to global events such as war or economic depression, or
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5 government actions under the pressure of external circumstances. For instance, alcohol
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7 consumption fell sharply in Europe and many other affected countries during both of the
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9 World Wars, and during the Great Depression in the U.S. in the 1930s (Terris, 1967; Eriksen,
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11 1993). But changes can also happen 'from below', in terms of changes in people's hearts and
12
13 minds. In the past, these have often been the result of popular social movements. In the first
14
15 flush of the popular temperance movement in the U.S., for instance, during the 1840s,
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17 alcohol consumption fell by one-half, without any important governmental action (Gerstein,
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19 1981). Other substantial changes have occurred without much public sign of an organized
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21 social movement. The rise in alcohol consumption in many countries in the thirty years
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23 before 1980, for instance, can be seen as reflecting both rising affluence and the repudiation
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25 of temperance sentiments in those countries, but was not primarily the result of an
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27 organised social movement (Mäkelä et al., 1981). While discussions of the long waves have
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29 not emphasised it, there is evidence that such changes historically have been led by a
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31 particular youth generation, as in Sulkunen's discussion of the Finnish wet generation
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33 (Sulkunen, 1983).
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45 **3.2 The "Total Consumption Model"**

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47 The main focus on factors influencing change in alcohol consumption in the period after
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49 World War II has been on changes in social context. These discussions were mostly
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51 influenced by Skog's theory of the collectivity of drinking cultures (Skog, 1985), which had
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53 been adapted from earlier concepts of Ledermann (1964). The theory has been very
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55 influential in explaining the population distribution of alcohol consumption over time, and
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57 also in formulating alcohol policy. According to the theory, there is a relationship between
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3 per capita consumption among drinkers in the population as a whole such that changes in
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5 rates of heavy drinking are related to proportional changes in mean consumption in the
6
7 population. Skog explained this strong relationship by assuming (1) that factors influencing a
8
9 person's drinking behaviour tend to combine multiplicatively, and (2) that an individual's
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11 drinking behaviour is strongly influenced by the drinking habits of an individual's social
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13 network.
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20 In explaining macro-level changes over time, Skog (1986) argues that these changes are the
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22 result of individual changes. Because each individual's drinking is strongly influenced by
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24 his/her co-actors' drinking behaviour, individual consumption will be synchronized at the
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26 level of social groups "to the effect that group members move more or less in concert up
27
28 and down the consumption scale" (Skog, 1986: p. 15). By extending individual ties, where
29
30 each actor is influenced by a small number of co-actors, who are indirectly tied to larger
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32 numbers of others and so forth, it is argued that each individual is influenced – directly or
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34 indirectly – by every other member of the society. As a consequence of the 'principle of
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36 long-range indirect ties', drinking becomes a collective phenomenon.
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45 Pointing to the relationship between total consumption and heavy drinking redirects public
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47 health concerns to the population and not the individual level, transferring the public health
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49 gaze from factors producing the individual "drinker" to collective and societal factors and
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51 policies. The total consumption model had substantial influence in the Nordic countries other
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53 than Denmark, which already had relatively restrictive alcohol policies (Bruun et al., 1975;
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55 Sutton, 1998; Room & Tigerstedt, 2008). Not surprisingly, most research supporting the
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57 model of collective change comes from these countries (Norström & Svensson, 2014;
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3 Raninen, Leifman, & Ramstedt, 2013; Rossow, Mäkelä, & Kerr, 2014; Room, 1999). However,
4
5 the “Total Consumption Model” has been criticised as not being specific enough for the
6
7 derivation of exact hypotheses that could be empirically tested (Gmel & Rehm, 2000). More
8
9 recently, Room and Livingston (2017), discussing the limits and anomalies of the model,
10
11 called for the need to extend the model to take abstention into account and to relax the
12
13 assumption of a homogeneous change of all subgroups in society. The latter limit had been
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15 addressed by Skog in a comment to an earlier critique by admitting that “... since we do not
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17 live in a static world, the relative differences between subgroups [...] cannot be expected to
18
19 remain fixed and the same everywhere and at all times. As a consequence, group means
20
21 could change at different rates and in different directions as societies change” (Skog, 2001:
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23 p. 330). This notion gives room to the observation that drinking in some subgroups of the
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25 society – youth, for example – may change at a different rate, at a different time and in a
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27 different direction from other groups.
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37 **3.3 Theory of Social Generations**

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39 When asking how historical changes in particular societies happen, we often find differences
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41 by ethnicity, particularly if there is not much socialization across ethnic boundaries (e.g.,
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43 Herd, 1987). There are often regional and class differences in the timing of changes. Often,
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45 particularly if the changes come primarily from shifts in attitudes and behavioural norms, the
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47 shifts seem to be led by particular generations (Woodman, 2016). Frequently, the shift is
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49 initially concentrated in the generation which is aged 15-25 when the shift gets under way –
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51 that is, in the life-stage when more than experimental drinking is being initiated, and
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53 perhaps also the stage at which the drinker is establishing a personal maximum in terms of
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55 how much he or she is willing to drink on a given occasion. The shifts in either direction in
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3 this age group can happen quite dramatically and quickly (Warner, 1970). Though the
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5 evidence is somewhat uneven, studies support the idea of generational changes in drinking
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7 practices, whereby a particular generation pioneers a change which is matched by
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9 succeeding cohorts and which progresses up through the population's age structure as the
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11 generation ages (Room, 1984a; Härkönen, 2013; Kraus et al., 2015).
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18 The most influential theorizations on the generational approach to social change in general
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20 emerged in sociology and in particular in the work of Hall (1904) and Mannheim (1952).
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22 According to Hall (1904), adolescence is a universal experience of 'storm and stress'
23
24 replaying the evolutionary history of the human race. In other words, this particular period
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26 in the development stage creates ideal conditions for change. Mannheim (1952) used the
27
28 generational approach to understand how different cohorts of German youth became the
29
30 source of new values and new political movements by contesting the ideas of their parents'
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32 generation. The two elements of Mannheim's theory of social generations consist, first, of
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34 the social condition in which new generations emerge. Second, these conditions will shape
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36 the modes of action, expression, and feeling of those who grow up within it. Generations
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38 emerge from sociological processes that interact with a particular life course and location,
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40 and rely on particular social and cultural processes. In order to shape subjectivity, a
41
42 generation must therefore, to a significant degree, share the same experiences and
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44 challenges. These shared commonalities that are decisive in generational shifts, or for
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46 distinguishing generational units, may encompass economic, political, cultural, or
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48 demographic experiences. For instance, the intensive use of social media, video games and
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50 other digital technology has been the key experience for the 'Net generation', born in or
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52 after the late-1990s (Twenge, 2014). For the 1968 generation, to take an earlier example,
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3 the commonalties in much of the West, leading to opposition against the established order
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5 and particularly the Vietnam war, were of societies frozen in a post-World War II settlement,
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7 with many perceived injustices (Horn, 2007; Jones & O'Donnell, 2012). The shared
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9 experiences of a generation, whether or not directed against established values, may lead to
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11 changes in the position this generation takes on particular matters such as possessing a car,
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13 smoking or drinking alcohol. The drivers of such changes may be externalities but also
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15 changes in communication and the way people socialize.
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23 **4 Possible reasons for decreasing trends in adolescent alcohol use**

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25 The sociology of generations has recently re-emerged in youth studies as a framework
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27 linking social change, youth, and the life course by claiming that “at particular points in time
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29 young people will face conditions different enough from those that faced the previous
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31 generation in their youth that many of the rules for making a life become uncertain and in
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33 substantive ways have to be rewritten, in ways that will have consequences in youth and
34
35 across the life course.” (Woodman, 2016: p. 25). The present paper draws on this tradition of
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37 analysis in presenting and discussing possible hypotheses that may explain changes in
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39 secular trends in adolescent alcohol use. We focus on particular conditions different from
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41 those experienced by previous generations that may impact the position of alcohol among
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43 youth, and the factors that may contribute to the ‘devaluation’, ‘disrepute’, or
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45 ‘neutralization’ of alcohol and its use.
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54 **4.1 Social and cultural norms**

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56 Social and cultural norms – what psychologists call “injunctive” norms – provide the basis for
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58 shaping young people’s behaviour. They are unwritten rules about how to behave and assist
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3 an individual in determining what is acceptable and unacceptable social behaviour (Cialdini,
4 Reno, & Kallgren, 1990). The shaping of social norms in terms of attitudes mainly takes place
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6 in the context of family, school and neighbourhood, and through peer influence. Policy
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8 changes with increased regulations and enforcement around accessibility and availability,
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10 significant government investment in prevention and health promotion interventions in
11
12 schools and communities, increased problematisation of alcohol use in popular media, and
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14 changes in family climate with lower approval of alcohol have changed the perception of
15
16 alcohol as a harmful drug in recent decades (Azar et al., 2013; Livingston & Callinan, 2017).
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18 As effects of those changes, adolescents' attitudes to alcohol have become more
19
20 conservative over time (Raitasalo et al., 2018), and they have become less tolerant of
21
22 intoxication than they once were (Törrönen, Roumeliotis, Samuelsson, Kraus, & Room,
23
24 2019a). Moreover, changes in family roles and functioning so that teenagers exclude their
25
26 parents less from alcohol-related discussion, and expect more communication and rules
27
28 from them, so that parents have a more central role in teenagers' mindsets (Simonen,
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30 Kataja, Pirskanen, Holmila, & Tigerstedt, 2017), may have further contributed to a shift in the
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32 perception of alcohol as a dangerous and unhealthy substance.
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45 The significance of how attitudes and their influence on social norms contribute to various
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47 risk behaviours has recently been demonstrated by Dolcini and colleagues (2013). Studying
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49 reference group norms in three areas (recreation, condom use, substance use), the authors
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51 found statistically significant associations with individual-level behaviour in friendship
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53 groups. The relevant reference group norms predicted condom use, multiple partnerships,
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55 and substance use by individuals. Furthermore, a U.S. study found that adolescents who
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57 matured in birth cohorts with more restrictive social norms relating to alcohol were less
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3 likely to consume alcohol (Keyes et al., 2012). Thus, changes in social norms may have
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5 changed the social position of alcohol, which may have contributed to the observed
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7 downward trend in adolescent alcohol use.
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10 11 12 13 **4.2 Parental supervision and relationship with children** 14

15 Parents play an important role in shaping adolescent drinking behaviour. It has been
16
17 suggested that strategies such as parental monitoring of alcohol and limiting alcohol supply
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19 to children, parental communication and quality of parent-child relationships, and parental
20
21 modelling, are strongly associated with delayed drinking initiation and reduced drinking
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23 among adolescents, and with less subsequent risk for later alcohol-related harm (Ryan, Jorm,
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25 & Lubman, 2010; Donovan, 2004). It is therefore conceivable that, perhaps as a consequence
26
27 of the increased attention to alcohol in policy and prevention programs and increased
28
29 awareness of the harmful effects of alcohol to adolescents, parental attitudes to their
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31 children's drinking have become more conservative. This may lead to parents limiting the
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33 supply of alcohol to their children and paying more attention to their own drinking practices
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35 around children.
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45 So what does the research evidence currently tell us about this hypothesis? It does not
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47 appear that parents themselves are drinking less, with research from cohort analyses
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49 suggesting high drinking levels among older cohorts (Livingston et al., 2016; Kraus et al.,
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51 2015; Meng et al., 2014), but parents could be making more of an effort not to drink in front
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53 of their children, with both perceived, and actual, drinking by parents important predictors
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55 of adolescent consumption (Ryan et al., 2010).
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3 In terms of supply, in Australia, there have been changes in secondary supply laws, which are
4 likely to have influenced both the willingness of parents to supply alcohol to children, and
5 the social acceptability of providing alcohol to minors (Roche, Steenson, & Andrew, 2013).
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7
8 Indeed, recent analyses show a statistically significant drop in parental supply of alcohol to
9 adolescents in Australia between 2004 and 2013 (Kelly et al., 2016) and an increase in strict
10 parental approaches to alcohol in the Netherlands (de Looze et al., 2014; Looze, Dorselaer,
11 Monshouwer, & Vollebergh, 2017). Similar patterns have been reported for Denmark: the
12 change in law that imposed an age limit for off-sales affected the drinking of teenagers older
13 than the age limit. It has been argued that this happened because parents had been
14 sensitised to the issue of teenage drinking by the debate over the policy change (Møller,
15 2002). However, while there is evidence that parental practices related to adolescents'
16 alcohol use have become stricter (Raitasalo & Holmila, 2016), it may not only be parental
17 control per se that matters. Raitasalo and colleagues (2018: p. 82) argued that "parents
18 knowing about their children's whereabouts should not be viewed solely as 'parental
19 control', but also as an expression of new forms of interaction within the family".
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42 In terms of the quality of parent-child relationships, research from Australia suggests that in
43 the late 2000s, family relationships were identified as the most significant influence in the
44 lives of adolescent Australians, which differed from the findings of research with young
45 people in the 1990s (Wyn, 2011). The majority of young people who participated in this
46 study enjoyed spending time with parents, and the author suggests that the increasing
47 importance placed on education has led to closer relationships between children and their
48 carers (Wyn, 2011). This change in youth-parent relationship was also found in a Finnish
49 study (Raitasalo et al., 2018). The authors interpret the effect in reduced episodic heavy
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3 drinking as a protective effect related to the youth-parent relationship. Family dynamics
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5 have changed towards more equal and democratic relationships between spouses and an
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7 increased respect towards children (Morgan, 2011). Studies also report that young people
8
9 have become less rebellious both in public and private contexts, suggesting that the gap
10
11 between generations has diminished (Simonen et al., 2017). Consequently, for adolescents,
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13 drinking may have lost some of its potential as a symbol of defiance.
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20 The evidence for improved quality of family relationships and increased self-conscious
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22 parental modelling of drinking suggests that these significant changes in parents'
23
24 relationship with children and parental supervision may be strongly associated with the
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26 observed declines in youth drinking.
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32 **4.3 Gender identities**

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34 Young people's diminished drinking may also be partly related to changes in gender
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36 identities. Historically, drinking to intoxication has been primarily a male activity, and even
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38 considered as a normal and compulsory masculine ritual in the transition to adulthood.
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40 However, recent studies suggest that heavy drinking may not be as important a building
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42 block for the masculinity of present-day young boys as it was to earlier generations (Lyons &
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44 Gough, 2017; Törrönen et al., 2019a). Today young boys do not only drink beer, consuming
45
46 more diverse alcoholic products, and are less threatened than previous generations by
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48 blending traits perceived as feminine into their drinking behaviour (Demant & Törrönen,
49
50 2011; Lyons & Gough, 2017). There seems to be also more room for boys to get recognition
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52 for their masculinity through other fields and activities, such as in computer gaming,
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54 bodybuilding and sports (Törrönen et al., 2019b). As current masculinity among boys seems
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3 to be less attached to heavy drinking and more open to including diverse ways of performing
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5 one's identity (Demant & Törrönen, 2011), drinking heavily may have lost its status as a cool
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7 and compulsory ritual in the transition to adulthood (Sande, 2002).
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12 While drinking has traditionally been seen as expected behavior for young men, young
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14 women's drinking has frequently aroused public concerns (MacLean, 2016) and been limited
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16 by strong regulatory norms (Hutton, Wright, Lyons, Niland, & McCreanor, 2016). Therefore,
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18 young women have been expected to control their drinking and keep it short of intoxication,
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20 staying within a socially decent and responsible femininity (Hutton et al., 2016).
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27 Since young women and young men face different kinds of cultural expectations and social
28
29 concerns related to drinking, the mechanisms that reduce boys' and girls' drinking are not
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31 identical (Törrönen et al., 2019a). As the invasion of social media into private drinking
32
33 situations has transformed the situations to be more public, this appears to have had
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35 consequences especially on young women's drinking by making their heavy drinking more
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37 vulnerable and less desirable. Studies show that young women engage in curating their
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39 virtual presence more intensively than young men, by 'airbrushing' photos that represent
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41 them in online worlds to minimize the negative aspects of their onscreen drinking, especially
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43 in relation to intoxication. They actively supervise in what way their drinking is represented
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45 in digital spaces to make it sure that it is not attached to promiscuous or disreputable images
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51 (Hutton et al., 2016).
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57 Another possible explanation of the decline of young women's drinking is related to changes
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59 in the social and cultural position of drinking among young people. As drinking has lost some
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3 of its symbolic power as a cool activity signaling entry to adulthood, young women seem to
4
5 be not as willing and excited as previous generations to challenge and transgress traditional
6
7 images of femininity by heavy intoxication. They seem to limit their drinking by identifying
8
9 with the conventional images of women as vulnerable to male violence and sexual
10
11 harassment (Törrönen et al., 2019a). For them, other arenas may provide more attractive
12
13 platforms and activities to play with or contest traditional feminine boundaries. Thus, while
14
15 the loosening and changing of gender identities may provide possible explanations to the
16
17 decrease of drinking among young people, it seems that the identified gender differences
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19 may have contributed to the observed diminishing of the gender gap particularly with
20
21 respect to heavy episodic drinking, with a lesser decrease among girls than among boys
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23 (Kraus et al., 2018).
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32 **4.4 Youth leisure time activities using digital information and communications** 33 **technologies** 34 35 36 37

38 Today's younger generation, sometimes referred to as Generation Z or 'Post-Millennials'
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40 (born after 1997), live in a globalised and connected world characterised by the widespread
41
42 use of information and communications technology including computers, mobile phones and
43
44 the Internet, social media, video and online game (Bennett, Maton, & Kervin, 2008; Boniel-
45
46 Nissim et al., 2015). It is therefore possible that increased time spent on the Internet and
47
48 engaging in digital forms of communication has changed the way young people socialise and
49
50 focus their leisure time, potentially resulting in less time for or interest in drinking.
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58 There is also evidence to suggest that the internet is increasingly being used to initiate social
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60 relationships, both romantic and otherwise, partly to lessen the anxiety associated with

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3 initial meetings (Valkenburg & Peter, 2009). This potentially reduces the need to use alcohol
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5 as a social lubricant, and to choose venues where alcohol is available as a space to meet for
6
7 the first time (Abrahamson, 2004). Even among networks of established friends, the ability
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9 to engage in group conversations and socialise or check in with friends more often via digital
10
11 communication prompts less of a need for face-to-face catch ups (Subrahmanyam, Reich,
12
13 Waechter, & Espinoza, 2008). There are, however, findings that counter this trend. For
14
15 instance, the amount of virtual time adolescents spent socializing with peers has been
16
17 reported to be positively related to the frequency of alcohol use and other delinquent
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19 behaviours (Meldrum & Clark, 2015).
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28 In addition to time spent communicating online, there is also evidence of youth spending
29
30 larger amounts of time playing video games (which can involve playing alone offline, or
31
32 against other people online), and watching streamed video content via services such as
33
34 Netflix or YouTube (Smohai, Urban, Griffiths, Kiraly, Mirnics, & Vargha, 2017; Matrix, 2014).
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36 Such activities can be either social or asocial, but may also be an influence toward time away
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38 from drinking venues.
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45 To our knowledge, only one study has explored the role of online activities on declining
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47 adolescent alcohol use (Larm, Raninen, Åslund, Svensson, & Nilsson, 2018). This Swedish
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49 study's comparisons between individual survey years pointed in diverse directions: no
50
51 association between time spent on computers and non-drinking; a positive association
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53 between increased social media communication and decreased probability of non-drinking;
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55 but a positive association between computer gaming and non-drinking. However, no
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3 interaction with declining drinking over time (2008-2012) was observed for any of the three
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5 activities.
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10 On the other hand, alcohol appears frequently on the Internet, with alcohol companies
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12 shifting a significant portion of their marketing to online platforms (Carah, Brodmerkel, &
13
14 Hernandez, 2014; Nicholls, 2012), and young people commonly using images of alcohol to
15
16 negotiate forms of social connection and popularity online (Goodwin, Griffen, Lyons,
17
18 McCreanor, & Barnes, 2016; Ridout, Campbell, & Ellis, 2012). Not surprisingly, there are
19
20 findings that students' use of alcohol-related social media-marketing content is associated
21
22 with problem drinking (Hoffman, Pinkleton, Weintraub Austin, & Reyes-Velázquez, 2014;
23
24 Moreno, Christakis, Egan, Brockman, & Becker, 2012). Further research is needed to
25
26 investigate the relationship between online activities and the position of alcohol, drinking
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28 and non-drinking among adolescents: what media activities might count as 'distraction' and
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30 help reduce consumption, and what is likely to exacerbate it.
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40 **4.5 Health, fitness, wellbeing and lifestyle behaviour**

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42 There are widespread perceptions that modern young people are more health-focused than
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44 previous generations. For example, a global consumer survey found that people born after
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46 the year 2000 were the most likely to be willing to pay a premium for 'healthy' food
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48 products (The Nielsen Company, 2015), while the rise of online fitness communities has
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50 been well documented (Tiggerman & Zaccardo, 2016; Jong & Drummand, 2016). Health
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52 concerns and fitness trends may have contributed to an increase in perceived riskiness of
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54 alcohol consumption (Livingston & Callinan, 2017), although these trends are not limited to
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56 adolescents. While this may reflect a growing health consciousness, the increased concerns
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3 about the health risks of alcohol consumption may simultaneously be contributing to a
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5 decline in adolescent drinking (Pennay, Livingston & MacLean, 2015).
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10 There is some empirical evidence that participation in organised leisure activities such as
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12 sports and arts are related to less alcohol use (Eccles & Barber, 1999; Thorlindsson &
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14 Bernburg, 2006), but also research reporting no association between increased sports
15
16 activity and a decline in drinking (Raitasalo et al., 2018). In general, it is hard to
17
18 find evidence suggesting broad changes in young people's relationships to health or physical
19
20 activity. Studies on health behaviour among 11-, 13- and 15-year olds in Europe, Canada and
21
22 the U.S. reported decreasing rates of self-rated health in the period 2006–2010 (Cavallo et
23
24 al., 2015), and inconclusive trends in health complaints in the period between 1994 and
25
26 2010 (Ottova-Jordan et al., 2015). Similarly, although there was a slight overall increase in
27
28 the amount of physical activity between 2002 and 2010, the majority of adolescents did not
29
30 meet current recommendations on this (Kalman et al., 2015). Data on obesity, as well, do
31
32 not support major changes in health behaviour (Australian Bureau of Statistics, 2011; Ogden,
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34 Carroll, Kit, & Flegal, 2012; Olds, Tomkinson, Ferrar, & Maher, 2009). Results from the HBSC
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36 study even show an increase in overweight prevalence in many Eastern European countries
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38 during 2002–2010, while in over half of the countries there were no changes (Ahluwalia et
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40 al., 2015). However, there is some evidence from the U.S. of declines in sugar and fat
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42 consumption by young people in recent years (Slining & Popkin, 2013), as well as an increase
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44 in fruit and vegetable consumption in the majority of countries participating in HBSC
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46 (Vereecken et al., 2015).
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3 While there is some support for parallel trends in health-related behaviours and alcohol use,
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5 the changes have not been consistent across the investigated areas, and the changes have
6
7 greatly varied between countries. Although findings support a link between health
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9 consciousness and alcohol use, there is still a lack of knowledge on the mechanisms of this
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11 relationship.
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17 **4.6 Social response**

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20 Another explanation posited for the decline in youth drinking is that it is a reaction against
21
22 both the high visibility of alcohol problems in preceding years and a resultant increase in
23
24 social controls around alcohol. Drawing on studies describing the cyclical or wave-like nature
25
26 of alcohol consumption trends (Room et al., 2009; Mäkelä et al., 1981), this perspective
27
28 argues that, as the harmful effects of alcohol become greater and more visible, formal and
29
30 informal social controls tighten so as to produce a downturn in alcohol consumption.
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37 Societal concern around youth drinking in some countries in the late 1990s and early 2000s
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39 was certainly extensive, with Measham famously describing a 'new culture of intoxication' in
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41 Britain characterised by 'determined drunkenness' (Measham & Brain, 2005). Attention
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43 particularly focused on the public spectacle of youth binge drinking rather than the long-
44
45 term increase in private drinking among older age groups which, arguably, contributed more
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47 to rates of alcohol-related harm. In the context of a public debate marked by a sense of
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49 crisis, the informal and some formal social controls around alcohol can be argued to have
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51 tightened during the period in which youth drinking declined.
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3 Of course, the second half of this argument is that, as controls tighten ever further, an
4
5 inverse reaction may occur whereby a new generation revolts against stringent constraints
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7 on their drinking, as has been described previously for the 1920s (Room, 1984a). This raises
8
9 questions regarding how actors in the policy debate and media should discuss and promote
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11 action to reduce youth drinking in the context of a diminishing problem. New thinking may
12
13 be required to consider how to sustain and support the decline without inadvertently
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15 fuelling a counteraction.
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23 **6 Discussion**

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25 There is convincing evidence that current alcohol use and heavy drinking has decreased
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27 among adolescents in high-income countries over recent years. We explored several
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29 hypotheses which have been discussed as main driving forces of this substantial change. The
30
31 point of departure of the present approach is the concept of 'long waves of alcohol
32
33 consumption', describing a process of increasing and decreasing alcohol consumption in high
34
35 income countries of the Western world, with surprisingly common patterns across countries
36
37 despite large differences in economic development and drinking cultures (Mäkelä et al.,
38
39 1981). While the increasing alcohol consumption after World War II has been explained,
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41 among other factors, by increasing leisure time, higher income or urbanization against the
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43 background of the repudiation of temperance sentiments, these factors were certainly not
44
45 the driving force for the downward trend in the second half of the 19th century (Mäkelä et
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47 al., 1981). It has been speculated that these long waves are recurrent phenomena,
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49 describing periods of increasing alcohol consumption accompanied by growing concerns
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51 about the harmful effects on people, public order or productivity giving alcohol a bad
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3 reputation (Room et al., 2009). For consumption to increase after a likely decrease, it would
4
5 take considerable time, perhaps several generations.
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10 Following the total consumption model, changes are characterised by changes within
11
12 individual networks that follow a common distribution. For youth drinking to decrease
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14 against the backdrop of stable or even increasing per capita consumption we need a model
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16 allowing subgroups to change at different rates, independently of other groups or at least
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18 with a time lag. The generational approach by Mannheim (1952) identifies youth as the
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20 source of new values or new movements. These changes in values may come about as
21
22 rebellion against established expectations and conditions, contesting the existing order, but
23
24 may as well arise from major changes in social conditions or technological developments. In
25
26 this sense, the present youth generation is unique with respect to the unprecedented
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28 innovations in digital communication and leisure time, health consciousness, and the public
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30 nature of practices.
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40 However, for alcohol consumption to decrease among youth the social position of alcohol
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42 needs to change. In other words, the conditions young people face must be different enough
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44 from those that the previous generation faced in their youth, if alcohol's position in people's
45
46 minds is to experience a substantial change. This may come as devaluation, repudiation, or
47
48 even neutralization of alcohol, in the sense that compared to the previous generation youth
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50 of the present generation are more aware of the harms of alcohol, so that drinking alcohol
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52 plays a less important role, or no role, in their life.
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3 Although changes in economic conditions have been identified as impacting on alcohol use
4 through price and relative affordability (Wagenaar et al., 2009), the downward trends in
5 alcohol use largely predated the recent global recession. Still, we do not preclude possible
6 influences of macro-economic factors such as inflation, rate of growth, national income,
7 gross domestic product and changes in unemployment. Yet, macro-economic indicators and
8 their trends over time differ remarkably between countries, so that they are unlikely to be
9 major contributors to parallel trends in youth alcohol use across countries.
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23 We are also not implying that alcohol policy may not play an important role in recent
24 reductions in alcohol use among adolescents. But although an extensive literature of
25 empirical studies about the effectiveness and the conditions of particular strategies for
26 controlling alcohol problems has been developed (Edwards et al., 1994), the approaches in
27 different societies in the Western world are considerably different. While control policies are
28 directed to the whole population in countries with a strong temperance tradition where
29 alcohol is problematized as being responsible for a broad range of social and health
30 problems, in countries without such a tradition the emphasis is more on the individual, with
31 the focus on education and persuasion (Room, 1999). Thus, by providing a frame for social
32 norms, alcohol policies strongly influence the position of alcohol in society. However, if
33 social and individual control tightens too much, an opposite reaction may be likely with a
34 new generation revolting directly or indirectly against too stringent constraints.
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54 The explanations proposed cut across theories and the theories themselves are not mutually
55 exclusive. For example, changes in social norms fits within long waves as evidenced by
56 shifting formal and informal controls over time, it fits within the total consumption model
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3 through the spreading of norms to one another, and it fits within generations by showing
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5 how this generation has different social norms to another. However, parenting fits much
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7 more neatly within generations than the other two theories. The theories are interlinked but
8
9 also contradict each other; for instance, the concept of long waves suggests changes in the
10
11 position of alcohol through social and cultural patterns, and the total consumption model
12
13 suggests the changes that result from this are passed between networks. But while the long
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15 waves concept and the total consumption model point to large-scale events affecting the
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17 population at large, there seem to be potential factors that result in only youth-specific
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19 changes. However, rather than offering explanations supporting one of the theories, we
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21 aimed at situating the potential explanations within broader theoretical understandings of
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23 how alcohol use may change within populations.
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32 By discussing possible hypotheses of what may have changed the social position of alcohol,
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34 we mainly describe mechanisms that may have changed the social position of alcohol among
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36 youth. Whether these mechanisms work singularly or in combination, and how much they
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38 contribute to the change, we cannot say. The data we have drawn on is mainly descriptive,
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40 and our consideration of it is based on reasoning beyond any scientific proof of causality in
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42 the form of a demonstration that the decline in youth alcohol consumption would not have
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44 happened had one of the above described mechanisms not worked in the proposed way. As
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46 we have recently argued (Pennay, 2018: p. S115), “a collaborative cross-cultural approach is
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48 needed to contextualise the international scale of the trend”, in the form of research taking
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50 account of the historical and generational perspective of change and based on longitudinal
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52 panel and qualitative studies. The present paper may serve as a starting point by providing
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54 theoretical guidance and a summary of present knowledge to such research. This line of
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3 research also needs to further investigate the mechanism underlying the observed
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5 differences in temporal trends between genders, socioeconomic or ethnic groups, and
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7 drinking cultures. For instance, in Europe, trends in episodic heavy drinking declined more in
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9 boys than girls, and the declining trends in indicators of alcohol, tobacco and cannabis use
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11 were much more consistent in Northern Europe than in the other European regions (Kraus et
12
13 al., 2018). Data from Germany also suggest that the overall decline in drinking volume and
14
15 episodic heavy drinking was strongest for the highest consumption level of people with
16
17 lower socioeconomic status (Gomes de Matos, Kraus, Pabst, & Piontek, 2015).
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25 **7 Conclusion**

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27 Although drinking levels and particularly rates of episodic heavy drinking in youth in some
28
29 countries of the Western world are still unacceptably high, we acknowledge the positive
30
31 decreasing trend in alcohol consumption among youth in recent years. What we learn from
32
33 history is that a decrease in alcohol consumption is inevitably accompanied or even
34
35 preceded by a change in the social position of alcohol. The reasons for this change may be
36
37 formal or informal reactions to the negative effects of alcohol, but also to changes in
38
39 technology, social norms, family relationships, or gender identities, etc. For interrupting the
40
41 recurrent cycle and avoiding a turn-around, we need to take advantage of the change in
42
43 sentiment and “lock in” these changes by new control measures (Room, 1984b). In other
44
45 words, from a public health perspective, considering alcohol’s role as a major risk factor, we
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47 can’t take our foot off the pedal. The model of change presented here hinges on the
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49 assumption that the change in the position the present young generation takes on alcohol
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51 proceeds through the life course, eventually reducing alcohol use in the whole population.
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3 However, while there is evidence for such changes, the extent to which these changes will
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5 carry through to later ages remains a question for the future.
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