

**The self-control vs. self-indulgence dilemma:
A culturomic analysis of 20th century trends**

Alberto Acerbi

*Department of Life Sciences
Brunel University London UK
alberto.acerbi@brunel.ac.uk*

Pier Luigi Sacco*

*DiSFipeQ
University of Chieti-Pescara
pierluigi.sacco@unich.it*

*metaLAB (at) Harvard
Cambridge MA USA
pierluigi_sacco@fas.harvard.edu*

* corresponding author.

Pier Luigi Sacco, DiSFipeQ, University of Chieti-Pescara, Viale Pindaro, 42, 65127 Pescara, Italy;
metaLAB (at) Harvard, 42 Kirkland St, 02138 Cambridge MA, USA.

The self-control vs. self-indulgence dilemma: A culturomic analysis of 20th century trends

Abstract

Within the conceptual framework of the Tightness-Looseness paradigm, we study the dynamics of the social salience of self-control (tight) vs-self-indulgence (loose) orientations across the 20th century on the basis of the English Google Books corpus, by means of the construction of specific lexica of which we track their relative frequency. We find that whereas the trend of self-control displays a steady increase throughout, that of self-indulgence is U-shaped, so that following a decline along the most part of the century, starting from the late 70s-early 80s we observe a reversal of the trend that signals an increasing salience of self-indulgence. Such result seems to reflect the consumerist turn that has characterized the post-industrial cycle from the 80s onwards. The coexistence of growing trends for mutually antagonizing orientations calls for further analysis of their social interplay. We also perform a parallel analysis on semantically related lexica that confirm the robustness of our findings.

Keywords

Self-control; self-indulgence; Tightness-Looseness; culturomics; consumerism.

JEL Codes: B52; C89; Z13

Certainly it is not usual any more for Western -- at least American -- society to value self-control. Personal expression and satisfaction of emotion is considered to be more healthy and honest than restraint and denial.

Dissanayake (1995), p. 136.

1. Introduction

The tightness-looseness paradigm has proven to be one of the most fruitful conceptual frameworks to understand how social norms vary across cultures, and how they evolve over time (Gelfand et al, 2017). A culture is said to be tight if norms are typically strong and tolerance of deviant behavior is low; conversely, it is said to be loose if norms are typically weak and tolerance of deviant behavior is high (Gelfand et al, 2011). Tightness and looseness as overarching social orientations are in turn characterized by distinctive socio-cultural

patterns. For instance, tightness favors social order as a consequence of closer social control, whereas looseness favors creativity as a form of exploration of possibilities shielded from social conformity pressures (Jackson et al, 2019). There are potentially many socio-cultural dilemmas that may be relevant in the analysis and interpretation of complex, relevant behavioral patterns found in different social and historical contexts, and the tightness-looseness paradigm naturally offers a context in which they can be meaningfully defined and assessed in terms of suitable correlatives of forms of tightness vs. looseness.

One of the most interesting and debated such dilemmas is that between self-indulgence and self-control, an early instance of which can, for instance, be found in the famous, 2500-years old Aesop fable of the ant and the grasshopper, which clearly takes position for the latter against the former. This fable provides an important cultural foundation for saving and prudent economizing as a key value of the Western ethos, but at the same time it lends itself to varying interpretations depending on the prevailing social value systems (Kennedy, 2020), once again confirming the open-ended status of the dilemma across societies. Outside the Western tradition, for example, Gandhi (1947) also took position in favor of self-restraint against self-indulgence in an eponymous book. The self-indulgence/self-control dilemma may also be seen as a leading motif behind Max Weber's identification of the Protestant spirit as the root of modern capitalism, which again identifies in self-restraint the behavioral pillar of long-term economic growth (Zou, 1994). On the other hand, as Weber himself notes, the focus on self-restraint comes at the price of disenchantment, that is, of giving up pleasure and mind-wandering as a driving force of human ingenuity – a dimension that will be recovered by leftist critics of capitalism such as Antonio Gramsci (Sommer and Sacco, 2019).

As it is well known, also self-indulgence has in fact been recognized as a pillar of economic prosperity by influential proponents of demand-side macroeconomics such as Thomas Malthus (Dutta et al, 2018), John Maynard Keynes and Thorstein Veblen (Watkins, 2015), although the latter was especially aware of the potential welfare-destroying implications of the search of status seeking through consumption (Wisman, 2019). More generally, consumerism is widely regarded by most economic stakeholders as a basic engine of any well-functioning market economy and boosting the consumption motive is often invoked as a natural solution to situations of protracted economic stagnation (Miles, 1998). Unsurprisingly, consumerism has then become a global cultural trend along the 20th century as a consequence of the increasingly generalized improvement of spending capacity and economic aspirations (Stearns, 2006), with possible psycho-socially dysfunctional effects in more affluent societies (Bartolini et al., 2014). However, the raising social awareness of the negative impact of excessive consumption on human well-being (Fellner and Goehmann, 2020), as well as on other key dimensions such as environmental sustainability, and the consequent search for new experience-based models of wellbeing that invite to recycling available goods in a circular economy perspective (Milios, 2018), or to de-cluttering as a form of psychological hygiene and of subtle aestheticization of restraint (Khamis, 2019), provide in turn cultural counter-forces that seem to start pulling the pendulum toward the opposite direction. The self-control/self-indulgence dilemma is therefore in perpetual evolution and is subject to the influence of a complex range of different, heterogeneous factors, whose analysis calls for a tailored, trans-disciplinary approach (Eisenberg et al., 2019).

The social prevalence of either of the two horns of the dilemma has important consequences in terms of salient social attitudes and judgments, criteria for the allocation of resources, and

reference standards of wellbeing. Studying the time evolution of the relative prevalence of self-control vs. self-indulgence as a driving social orientation is therefore of great relevance from many different angles, including policy ones (Moffitt et al, 2011). The tightness-looseness paradigm invites to tackle the issue in terms of the dynamic cultural evolution of tight vs. loose value orientations. We can ask in particular what are the socio-cognitive mechanisms that favor the diffusion of a certain attitude as a reference value orientation against other, competing ones (Shilton et al, 2020).

In this paper, we provide a preliminary analysis in this direction, by tracking the time evolution of the relative social salience of the two orientations, as emerging from the analysis of a very large corpus of texts in English over the time span of the whole 20th century. In particular, we track the relative frequency of a number of terms closely associated to self-control vs. self-indulgence in the almost 3 million books covered by the Google Books corpus for the period 1900-2000, extremes included. The use of such large corpora of printed texts to track the time evolution of complex cultural traits has now been established in the scientific practice (and generally denoted by the term ‘culturomics’; Michel et al, 2011) and has been particularly fruitful in the analysis of cultural transmission phenomena (Sindi and Dale, 2016) and in the investigation of the relationships between ecological and cultural change (Greenfield, 2013).

The 20th century is, in particular, an appropriate period of analysis of the dynamic of evolution of the relative social salience of self-control vs. self-indulgence. On the one hand, the 20th century has witnessed a growing influence of a managerial culture of control (Thompson and van der Broek, 2010) that has contributed, although with the expected cross-cultural variations (Gelfand et al, 2006), to the tightening of organizational culture (Windsor, 2009). On the other hand, the same century has also witnessed, as already remarked, the gradual transformation of consumption from the response to an urge to satisfy need to a form of identity building and self-expression (Zukin and Smith Maguire, 2004). This paves the way to an implicit recognition of self-indulgence as a form of defense of self-integrity (Sivanathan and Pettit, 2010) and pursuit of self-worth (Batra and Ghoshal, 2017) through the exploration of, and experimentation with, one’s own desires (Clarkson et al., 2013). In view of these conflicting social and cultural influences, which are closely intertwined in contemporary capitalist societies, it is difficult to anticipate how the social dynamics of relative salience of the two terms has unfolded across the last century.

In our analysis, we find an interesting pattern. Throughout the first half of the 20th century and well into the second half, self-control clearly emerges as the dominant tendency, with the influence of self-indulgence steadily declining in parallel. However, starting from the 70s, we witness a U-turn in the dynamics of self-indulgence, whose salience starts to grow, and a concurrent slowing down of the momentum of self-control. This trend seems to closely reflect the revolution in the consumerism culture of the 80s which imbues consumption with a sort of ‘magical’ quality turning it into a cultural touchstone of mature capitalism (Lee, 1993). More generally, this ‘dynamic regime change’ that seems to mark a switch from tightness to looseness in the English-speaking cultural world, may reflect a number of concurrent factors at work, which are amenable to analysis in terms of cultural transmission processes, and which invite further research, especially in terms of their impact on prevailing social norms and on the social regulation of behaviors.

The remainder of the paper is structured as follows. Section 2 presents a brief review of the literature on culturomic analyses of cultural and social trends. Section 3 introduces our data and methodology. Section 4 contains our main results. Section 5 discusses the results. Section 6 concludes.

2. Culturomic analysis of cultural and social trends

Culturomic methods of analysis have proven to be particularly powerful in highlighting subtle trends of long-term cultural change across a variety of different corpora, some of which were previously poorly considered by quantitative social science research.

An interesting field of application has been the tracking of the relationship between macroeconomic conditions and their trace in literary corpora as a marker of economy-related social attitudes. Bentley et al (2014) show for instance how the negative effects of economic crises reflect into literary expression along a decade-wide time window, and that such effect holds across corpora in different languages, in this case English and German. Chen and Yan (2016), working on the 20th century English Google Books dataset, highlight a close relationship between the state of the economy in the US and literary references to class and social status; interestingly, such relationship holds for levels of economic activity but not for those of economic inequality. At a more fundamental level, Roth et al (2017, 2019) analyze Google Books sub-corpora in different languages for the 1800-2000 period to question the adequacy of capitalism as a satisfactory systemic characterization of complex market societies.

Another field in which culturomic analysis has proven of interest has been that of the evolution of socio-cultural dispositions at various levels. In the case of changes in gender equality, for instance, Twenge et al (2012b) report, for the American English Google Books corpus for the 1900-2008 time span, that the relative frequency of use of male vs. female pronouns (and in particular, the relative increase in the use of the latter) reflects the improvement of women's status as captured by socio-economic indicators such as educational attainment, labor force participation and age at first marriage, as well as by psychological traits such as assertiveness. Ye et al (2018) use the English Google Books corpus between 1800 and 2000 to analyze the changes in the incidence of word markers of Big Five traits employed to describe the two genders, finding again that differences in usage and trait characterization across genders have shown some reduction over time.

Also the study of the shift from collectivist to individualistic orientations that has been long thought to be associated with mature capitalism has attracted considerable attention. Twenge et al. report an increase in the incidence of individualistic words and phrases (2012a) and a shift from collective to individual pronouns use (2013) in the American English Google Books corpus between 1960 and 2008. Kesebir and Kesebir (2012) look at whether the shift toward individualism in American culture would also reflect into a reduced incidence of terms relating to moral excellence and virtue, finding that their cultural salience has been substantially decreasing. Hamamura and Xu (2015) register a similar shift from collectivism to individualism in the Chinese Google Books corpus, 1950-2008, as measured by the varying incidence of collective vs. individual pronouns – a remarkable result in view of the traditional collectivist orientation of Chinese culture. Zeng and Greenfield (2015) find an analogous result

studying the relative dynamics of incidence of Chinese word markers for individualistic vs. collectivist values in the same corpus in the 1970-2008 period.

Finally, culturomic analysis has been employed to track changes in the salience of emotional or cognitive traits in cultural production, such as in the case of books, songs, or movies, also making use of corpora other than specific language versions of Google Books. Acerbi et al (2013) analyze changes in emotionally related English words in the English Google Books corpus 1900-2008, finding a general decrease in usage, but with an important difference between American and British English, with the former becoming relatively more ‘emotional’ than the latter in the last fifty years. Morin et al (2017) find, on the basis of an analysis of the Google Books fiction corpus in English and of two smaller but significant selected corpora of texts, that Anglophone fiction has experienced a two-centuries-long decline in the relative salience of emotional terms, which is almost exclusively due to the decline in the expression of positive, but not negative, emotions. Brand et al (2019) work on two different datasets of song lyrics, one of which with more than 150,000 songs, over the period 1965-2015, to analyze emotional expression along similar lines, finding again a significant relative increase in the negative emotional valence of lyrics.

Culturomic methods have also been used to analyze the long-term evolution of tightness vs. looseness specifically. Jackson et al (2019) report a clear tendency toward loosening in American culture over the past two centuries, which also raises, as already highlighted, a creativity-order tradeoff that poses serious challenges to the social governance of complex, knowledge intensive societies – as it is the case with most socio-economically advanced countries today. The analysis of the present paper directly relates to that of Jackson et al. (2019) in that it covers a specific dispositional dilemma that is closely associated to the tightness-looseness dyad, and therefore contributes to a still relatively limited stream of research which has however a remarkable potential for further application.

3. Data and methods

In this paper, we track the relative salience of self-restraint vs. self-indulgence in the English Google Books corpus (Michel et al., 2011; Lin et al., 2012). We used the “English_2012” corpus, including all printed materials in English language, both fiction and non-fiction. The dataset contains the frequencies of the n -grams, i.e., sequences of n items, where items are uninterrupted strings of symbols (usually, an item is a word). We are interested in frequencies of 1-grams, in particular the words associated to the characteristics we are analyzing (see below): for each word, the frequencies we collect correspond to the exact match found in the dataset. We consider books published between 1900 and 2000 (extremes included), for a total of around three million books (2,980,271). The number of books varies considerably during the period, with, for example, around 12,000 books in 1900 and around 103,000 books in 2000, so when presenting the trends, we normalize using the total number of 1-grams for each year. We limited our analysis to this period to maintain a relative homogeneity in the coverage, as there are much less books present in the sample before the beginning of twentieth

century, and as more recent books, published after 2000, are still being included in the corpus, possibly biasing the selection.

Making an exclusive reference to English language clearly introduces a cultural bias. However, as we fix our attention on the 20th century, and given that in this time period English has functioned as a global language platform for the diffusion of contents and ideas, we think that this particular choice can be indicative of a global cultural trend, which is obviously subject to local variation and even disconfirmation, but that is a first meaningful benchmark for our analysis. Also the frequent remark that the overall composition of the Google Books corpus is not fully specified and accessible and that the incidence of scientific publications is such that the corpus does not reflect actual trends in popular culture but rather those of academia is not a major source of concern in our case, as we are not primarily interested in trends in popular culture but in the evolution of the relative salience of self-control vs. self-indulgence as key social orientations, and their coverage in the scientific literature is a good proxy in this regard.

To build an appropriate lexicon of verbal correlatives for the two notions, we have chosen two complementary angles: building lexical correlatives directly for the control/indulgence terms, and building a complementary set of lexical correlatives for two closely correlated verbal forms, namely ‘want’ as associated to indulgence, as the most direct and elementary form of manifestation of volition and desire, and ‘must’ as associated to self-control, as the most direct and elementary form of manifestation of the restriction to choice as prescribed by a norm of some kind. The rationale behind this approach is to make an indirect check of the robustness of the results by investigating two related, complementary lexica to operationalize the same concept. One might object that ‘must’ and ‘want’ are too general terms, which can be used to express a wide variety of meanings in very different contexts, and that sometimes such meanings could even overlap, as, e.g., in the case “I want to have this”/“I must have this”. There are alternative, more specific terms that could be seen as closer correlatives for the control/indulgence dilemma. However, the fact that we choose very general-purpose terms for the robustness check makes the test more, and not less demanding: if the relative dynamics of must/want closely reflects that of restrain/indulge, this means that such trends are very robust, to the point of being reflected even in general-purpose dyads of terms which, in their more common uses, are clearly related to self-control and self-indulgence, respectively.

In particular, we built a list of 30 words for each of the four items (restrain/indulge, must/want), which represent some of the most common semantic correlatives to the reference term. The list was built, with the help of the Merriam-Webster online thesaurus, starting from a first seed list of close synonyms of the verbal forms ‘indulge’, ‘restrain’, ‘must’, ‘want’, and progressively enlarging them with synonyms of synonyms and closely associated verbs, manually selected at each round of search according to their relevance for the semantic focus of our query, until the target quota for each lexicon was reached. We intentionally also kept words which are not in current use today since the analysis covers the whole 20th century and filtering the lexica for current usage would have introduced a further bias. We report the list of the words for each category in Table 1 below.

Table 1

indulge	restrain	want	must
allow	adjust	adore	advise
amuse	administer	aspire	administer
appease	apply	attract	appoint
award	balance	choose	approve
coddle	brace	claim	arrange
comfort	consolidate	covet	authorize
concede	control	crave	check
delight	counsel	demand	command
energize	discipline	desire	control
entertain	exercise	discharge	coordinate
enthrall	guide	expect	decide
excite	limit	fancy	delegate
grant	manage	flatter	delete
gratify	modulate	fulfil	determine
indulge	monitor	gratify	direct
lure	oversee	intend	enforce
pamper	regulate	like	establish

permit	reinforce	love	execute
please	resist	lure	manage
quench	restrain	meet	organize
satiate	rule	need	plan
satisfy	settle	please	prevent
seduce	steer	prefer	prohibit
surrender	strengthen	require	recommend
tease	supervise	satiate	reject
tempt	survey	satisfy	report
thrill	temper	seduce	require
tickle	train	suit	stop
titillate	wield	wish	supervise
yield	withstand	yearn	train

For each category, we present three main analyses: the general trend in the corpus, the contribution of single words to the general trend, and the trend when excluding high-frequency words. The last two analyses allow us to check the robustness of the general trends: since word usage is characterized by strongly skewed distributions, we check whether some trends might be driven largely, or entirely, by the dynamics of high-frequency words.

4. Results

In Figure 1, we report the results of our analysis for the indulgence-related lexicon. We track average frequency by year across the period of observation and compute the regression

line by means of the LOESS method. As it can be seen, the regression line is U-shaped, with an inversion occurring around the early 70s. Before that moment, indulgence showed a marked, steady decline, to start growing afterwards.

To give an intuitive idea of the magnitude of the trend, in 1900, 0.0014% of the words in the books in the corpus were related to our “indulge” category, and they were 0.0012% before the 70s. These figures appear extremely small as they are calculated on the total number of words, but what we are interested in is the *relative* change: in this case, a 15% decrease in the usage of these words in books in around 60 years.

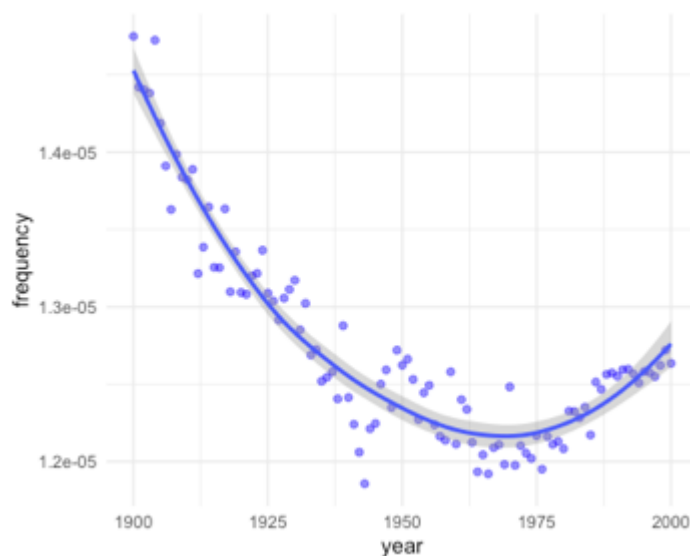


Figure 1: General trend for the 30 terms semantically related to ‘indulge’: average frequency by year, and regression line (LOESS method).

The specific words that are most responsible for the trend, and the extent to which the trend itself is driven by high-frequency words, are shown in Figure 2 below.

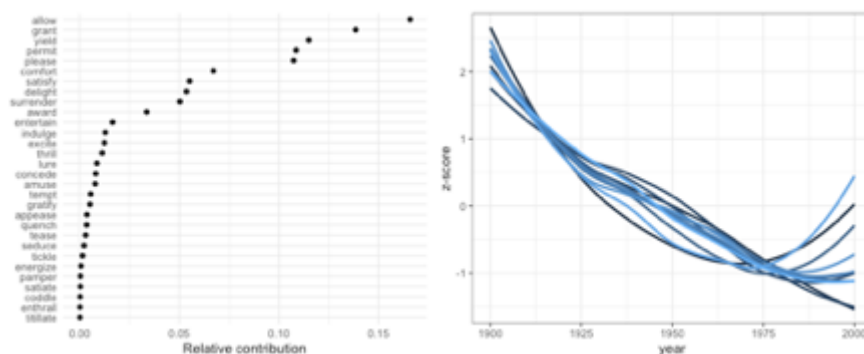


Figure 2: Left: Relative contribution of the 30 terms semantically related to ‘indulge’: average frequency by year, and regression line (LOESS method). Right: Regression line of the z-scores

of the trends when excluding high-frequency words (the “lighter” the color, the more the high-frequency words excluded, up to a maximum of 10).

In Figure 2, we see that there are a few words that provide an outstanding relative contribution to the incidence of indulgence-related words in the texts, namely, ‘allow’, ‘grant’, ‘yield’, ‘permit’, and ‘please’. Five more words offer a less marked contribution but still outstanding with respect to the rest of the corpus: ‘comfort’, ‘satisfy’, ‘delight’, ‘surrender’ and ‘award’. As most of these are words that appear with high frequency in English texts and can take a variety of meanings, we have proceeded to test the stability of our trend analysis with respect to the selective omission of high frequency words from the indulgence-related lexicon, up to a maximum of 10 canceled words. We map the corresponding variations of the z-scores against years of observation, where the more the color of the curves shifts from black to light blue, the more the omitted high-frequency words. As it can be seen, the trend we find is robust with respect to the omission of high frequency words from the lexicon.

We now conduct an analogous exercise for the restraint-related list of words. The regression results are shown in Figure 3.

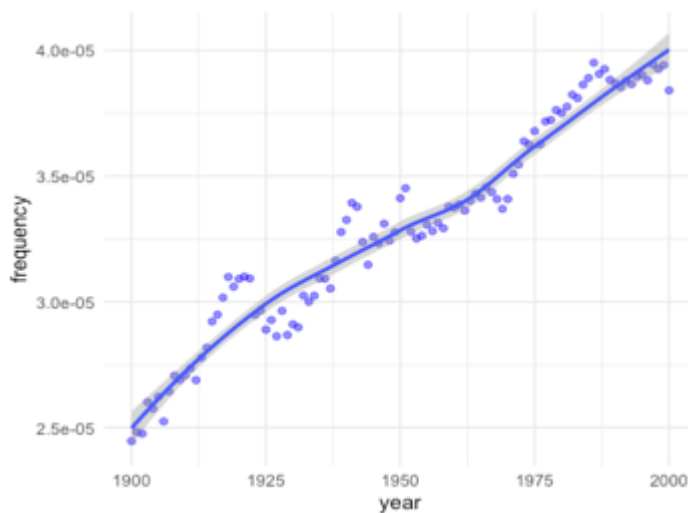


Figure 3: General trend for the 30 terms semantically related to ‘restrain’ (see Figure 1 for details).

In the case of the restraint-related lexicon, we observe a trend of relative incidence that is constantly growing along the period of observation, although at varying rates.

Again, we consider the relative contribution of different words from the lexicon and the effect of high frequency words in driving the trend, as shown in Figure 4.

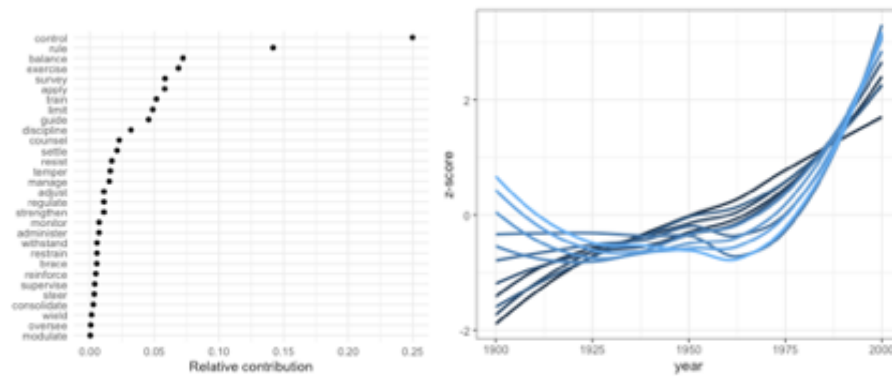


Figure 4: Left: Relative contribution of the 30 terms semantically related to “restrain”. Right: Regression line of the z-scores of the trends when excluding high-frequency words (see Figure 2 for details).

In this case, there are basically two terms that stand out as to their relative contribution to the overall trend, namely ‘control’ and ‘rule’, two high frequency words, which are used with significant semantic variation in English language but whose core meaning is rather closely related to the semantic sphere of restraint. There is also another set of terms that contribute more significantly than all the others, namely ‘balance’, ‘exercise’, ‘survey’, ‘apply’, ‘train’, ‘limit’ and ‘guide’. For some of them we have again possible high-frequency use-driven biases. The corresponding analysis when high frequency words are excluded shows again a substantial confirmation of the trend, albeit with a relatively more complex pattern than the one emerging from mere frequency analysis.

When we carry out an analysis along similar lines on the want-related and must-related lexica, we obtain the following results. For the want-related lexicon, the regression results are shown in Figure 5.

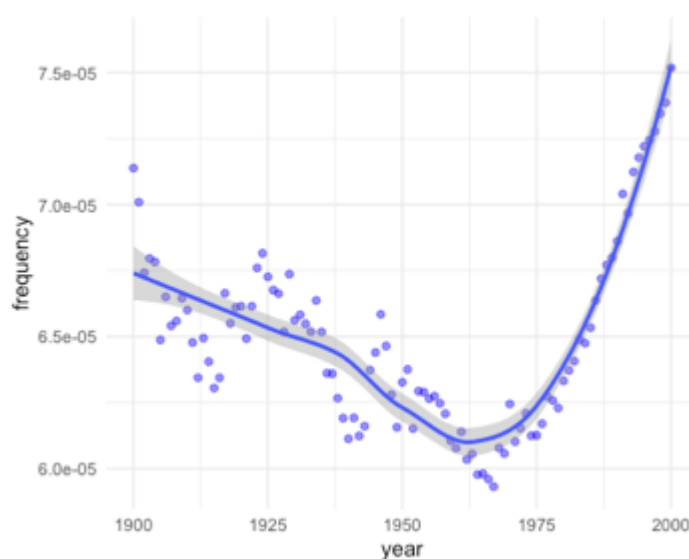


Figure 5: General trend for the 30 terms semantically related to “want” (see Figure 1 for details).

As shown in Figure 5, the trend closely matches the one found for the indulgence-related lexicon, the main relevant difference being a slight anticipation of the turning point to the late 60s. Figure 6 also confirms that the analysis is robust with respect to the omission of high frequency use words. There are three very high frequency words that mainly contribute to the general trend: ‘like’ (whose incidence is more than double than all the other ones), ‘love’ and ‘need’. Additionally, most of the usages of ‘like’ could be not related to its function as a verb, which is the one we considered here in its semantic relationship to ‘want’. In this case, therefore, controlling for the omission of such words is particularly important, and the fact that the trend is confirmed corroborates our general result (a decrease until the 1960s followed by an increase, as shown in Figures 5 and 6 above).

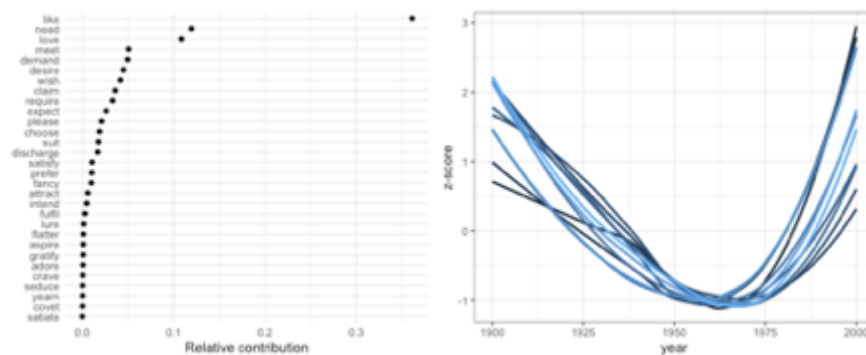


Figure 6: Left: Relative contribution of the 30 terms semantically related to “want”. Right: Regression line of the z-scores of the trends when excluding high-frequency words (see Figure 2 for details).

Finally, we consider the analysis of the must-related lexicon, which once again confirms the trend found in the analysis of the restraint-related one, as shown in Figure 7. In Figure 8, we see that the most relevant words as to the contribution to the overall trend are ‘control’, ‘report’, ‘plan’ and ‘direct’, but despite that these are all high frequency words, the robustness analysis confirms that the pattern we found is not dependent upon this source of bias.

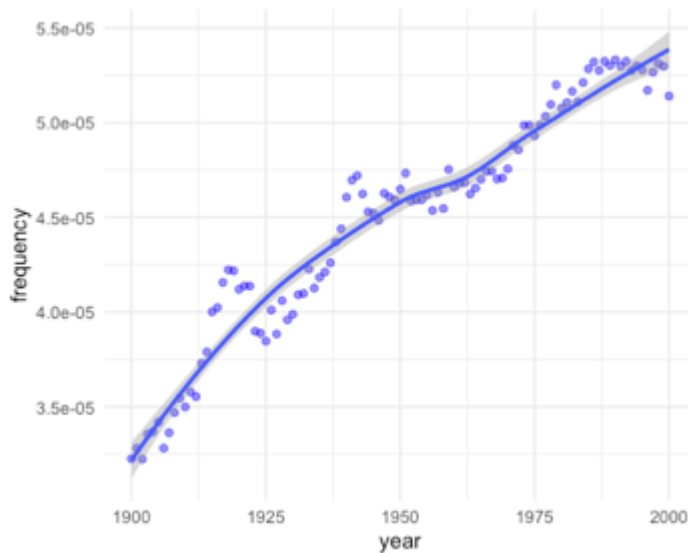


Figure 7: General trend for the 30 terms semantically related to “must” (see Figure 1 for details).

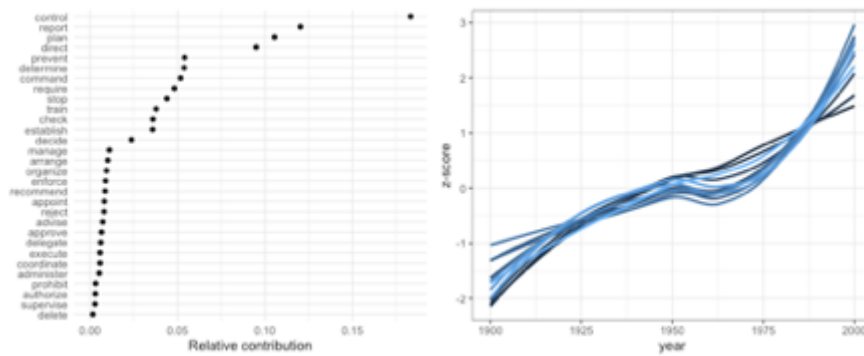


Figure 8: Left: Relative contribution of the 30 terms semantically related to “must”. Right: Regression line of the z-scores of the trends when excluding high-frequency words (see Figure 2 for details).

5. Discussion

We found clear trends in the usage of the words semantically related to our four categories in the *English* sample of the Google Books corpus. The trends of ‘indulge’ and ‘want’ are both U-shaped, showing a decrease followed by an increase starting at the turn of the 70s. The trends of ‘restrain’ and ‘must’ are also clear, with an increase throughout the century. Such trends seem overall robust with respect to the contribution of high-frequency words.

Tightness and looseness are complex, multidimensional constructs, whose measurement requires a rich methodological toolbox. The self-control/indulgence dyad is more focused, and yet closely related to the more general one, of which it can be considered a specific component, albeit one with a particular socio-cultural significance. The interest in the analysis of this particular dyad lies in the fact that it has played an important role in human cultural history and

presents a close relationship to one of the key human moral dilemmas, frugality and sobriety versus extravagance and prodigality, a contraposition that has meaningful implications for social and economic choices. As we have argued in the introduction, from a socio-economic viewpoint one can make equally compelling cases for both indulgence and control as key pillars of prosperity, and yet they are generally presented as opposed in their dispositional nature and in their behavioral implications.

For this reason, analyzing the dynamics of the relative cultural salience of the two terms across the 20th century is of particular interest. What we learn from international comparisons is that both extreme tightness and extreme looseness are dysfunctional. Thriving societies are those which are characterized by a fair balance of the two elements, which ensures better psychosocial outcomes in terms, e.g., of happiness, dysthymia, and suicide rates, with respect to more extreme tight or loose societies (Harrington et al, 2015). What does this imply for our analysis of control vs. indulgence? In order to answer this question, we must first discuss what are the forces that might help explain the factors at work behind the trends that we find.

Considering that our main finding in the analysis of the indulgence-related cultural trends is that such trend has a U-turn as the 60s make way to the 70s, one cannot help noticing that this particular historical moment has been globally characterized by a cultural revolution that has implied a sudden release of previously very binding social constraints. This is the moment when the sexual revolution broke at the global macroscale (Allyn, 2000), accompanied and often complemented by the drugs and music revolution, marking the ‘countercultural’ era as the triumph of ‘permissiveness’ (i.e. indulgence) over ‘control’ (i.e. restraint) (Collins, 2019). Such permissiveness was initially associated to self-authenticity and to a rather critical stance against consumerism and the materialistic values of the bourgeois way of life, so that indulging was essentially meant as transgression of moral imperatives and social conventions rather than as excess in consumption (Miller, 2011). However, the increasing social approval of indulgence as a hallmark of the countercultural revolution (Frank, 1998) and as a route to self-acceptance and self-esteem (Jezkova Isaksen and Roper, 2012), widely heralded as key coping resources in post-industrial societies (think e.g. of “Because I’m worth it”, the longest running tagline in advertising, used by L’Oreal for more than 40 years worldwide), eventually led to a shift in focus, paving the way to the hyper-consumerism cycle starting with the 80s (Lee, 1993; Frank, 1998), and eventually absorbing anti-consumerism itself as a specific form of consumption (Möckel, 2019). Once indulgence is socially legitimized and socially trending, ‘regulating’ it becomes intrinsically contradictory and culturally unfeasible.

Our results seem to be consistent with what is to date one of the most comprehensive long-term analyses of the evolution of American consumerism across the 20th century, namely Gary Cross’ (2000) study which details the transition from a value system what was originally highly charged with strong anti-consumerist (self-control) traits, inherited by the traditional foundational cultures of early American immigrants and in particular by puritanism, to a value system that, at the turn between the late 70s and the 80s, after the transitional postwar phase of the 1960s-80s, opens a new era of materially and ideologically unlimited (unrestrained) consumption.

Self-indulgence, as opposed to self-control, is also widely considered, as we are reminded by the passage cited in the paper's exergo, as a desirable cultural trait in its own right, and not incidentally the evolution of brand icons themselves tends to reflect the dynamic tension between the two motives (Merchant et al, 2018). On the one hand, the association of self-indulgence with authenticity and spontaneity may be regarded as a legitimization of self-centered individualism with low empathic orientation (Varga and Guignon, 2020), as opposed to responsible, prosocial orientations that prioritize social over personal interest through the exercise of the self-control of the latter (Martinsson et al., 2014; Joosten et al, 2015, Achtziger et al, 2018, Ugur, 2021). On the other hand, authenticity and spontaneity as unrestrained forms of self-expression, due to their unfiltered emotional content (Serazio, 2017), are also regarded as personal or organizational traits that favor transparent communication (Molleda, 2010). Moreover, they may command social approval in Western individualistic societies, if seen as prosocial traits in antithesis to a self-surveilled, narrow-minded focus that is associated to the anti-social pursuit of self-interest (Berman, 2009). Self-indulgence may also be legitimized as a coping strategy against self-manipulated perceived gravity of existential threats (Tezer and Sobol, 2021), and as a self-reinforcing justification for further self-indulgent choices (Akamatsu and Fukuda, 2021). Moreover, individuals learn to strategically exploit the micro-structure of the context of choice to embrace self-indulgent options that bypass control mechanisms set to enforce goal-oriented behavior (Lee et al, 2016).

This ambiguity of the social implications of self-indulgence also reflects in the already remarked double-sidedness of the consumerist revolution of the 80s, where sociability and anti-social motifs are deeply intertwined (Sandlin and Milam, 2008). The U-turn starting from the 70s can therefore also be read, as an additional interpretive key, in terms of the mounting social trend supporting self-expression and creativity at the expense of repressive social censorship mechanisms that has been another main legacy of the countercultural socio-cultural movement (Whiting and Hannam, 2015). Although our window of analysis stops at the end of the 20th century, it is interesting to note that the increased legitimization of self-indulgence might have been further amplified at the beginning of the new century. A factor that could favor this process is the mature phase of the diminished expectations spiral faced by the younger generations, whose lifetime prospects are increasingly seen as worse with respect to those of their parents (Lasch, 1978). In the case of the millennials generation, for instance, it turns out that even decisions where self-control typically plays a role such as financial ones are generally no longer necessarily affected by self-control motives, and in particular are guided by long-term financial goals setting and expenditure planning only for individuals with high self-control traits (Rey-Ares et al, 2021).

It is however also important to stress that, despite the U-turn in the self-indulgence trend, the self-control one has kept strengthening as well along the century. It is as if both dimensions are supported by suitable, self-reinforcing social incentives, which likely tend to operate at different levels. To understand the interplay of these two dimensions is an interesting challenge for future research. For instance, one could observe that the widely documented self-indulgence drive in consumption choices in the past few decades has been accompanied by a growing social emphasis on sophisticated strategies of self-control of impulses and bad habits (Quinn et al, 2010; Mandel et al., 2017) and of self-modification (Watson and Tharp, 2014), culminating in the diffusion in policy practice of non-coercive but clearly control-focused

approaches to the architecture of choice such as nudging (Hertwig and Grüne-Yanoff, 2017), and even in explicitly self-control centered approaches to compulsive buying (Horváth et al., 2015). It is in principle possible to envision self-control as a coping strategy to curb the excesses of self-indulgence, and self-indulgence as a healthy reaction to the dysfunctional inhibitions of self-control, so that the two tendencies need to be dynamically balanced (Gómez-Miñambres and Schniter, 2017), and this is one possible reason why they might complement rather than antagonize each other. This could be an interesting starting point for a specific natural or field experiment.

As a final point, it is interesting to compare our results with those found by Jackson et al (2019). Whereas our analysis focuses upon a specific dyad related to the tightness-looseness framework, namely restraint/indulgence, Jackson et al consider a more general lexicon of tight vs. loose words. We feature 30 items for each of our lists, and for both restraint and indulgence we consider two different list of words to test for robustness. Jackson et al feature 20 items and consider a single list for tight and loose words, respectively. Our lexica and those of Jackson et al contain some limited overlaps. We conduct our analysis on the English Google Books database over one hundred years, whereas Jackson et al (2019) consider a subset of Google Books published in the United States over two hundred years. The above differences make our results difficult to compare to those of Jackson et al, who find in particular a decrease in tightness in the US over the period of observation, whereas we find an increase in self-restraint. Such difference could be due to the fact that the decrease in tightness in the US found by Jackson et al has been more than compensated by opposing trends in other countries as reflected in English language books published there and could additionally depend upon other features such as the different period of observation, the size of the lexica, etcetera. More research is needed to provide a reliable basis for meta-analyses of many different studies which will allow us to draw out a more solid picture of these long-term trends.

Our analysis, despite its simplicity, can therefore be seen as a first step in generating questions about the dynamics of long-term social trends that may be useful to better understand the action of social forces on individual and collective dispositions, attitudes, and behaviors.

6. Conclusions

The self-control vs. self-indulgence dilemma is likely to be as old as human culture, and the way in which it is modulated in different social and cultural contexts and in different epochs may be a meaningful social signal of considerable potential analytical value. In our paper, we have found that, in the course of the 20th century, there has been a significant structural change: after a long period of relative social predominance of self-control attitudes, self-indulgence has gained momentum as a consequence of the consumerist revolution of the 80s, whose emergence has likely been favored by the countercultural turn of the previous two decades.

There are various possible directions of future research of potential interest. The most obvious is to analyze whether one finds an analogous pattern to that found in the present study in other corpora in different languages for the same period which are comparable to the one

examined here. The Google Books archive is constantly growing, and this is an interesting next step to take. Moreover, it would be interesting to embed the present research in a larger semantic search space where the self-indulgence/self-control dilemma is related to other meaningful dimensions of the tightness-looseness spectrum, to understand to what extent such sub-dimensions synergize rather than oppose and to gain some more fine-grained insight on the underlying forces at work. Finally, it would be interesting to build an analytical model that can parsimoniously replicate such social dynamics to arrive at a characterization of the cultural evolution process that drives the observed trends.

Our study also has limitations. The most apparent one is the reliance on a corpus of texts which, although very large, is very heterogeneous and not easily mapped. This may be a potential source of bias whose extent and characteristics cannot be directly evaluated, due to changes in the composition of the corpus or general stylistic changes (Koplenig, 2017). On the other hand, we have today few alternatives in terms of corpora which are comparable in size and variety. Building more focused and transparent databases of comparable size in the future is a priority and at the same time a big challenge. In addition, we have already remarked above that focusing on the English Google Books corpus inevitably under-represents cultures and societies that typically do not publish their texts in English. One may note, however, that the most influential polities at the global scale in the 20th century, the British Empire and the USA, are both English speaking, and that English has been by far the reference language of 20th century cultural industry and of its material culture (Lash and Lury, 2007). The trends that we analyze therefore represent the socio-cultural mainstream (Martel, 2010), and major local differences could emerge in specific socio-cultural contexts, especially if non-English-speaking. Another significant limitation is the lexicon we adopted. The list of terms associated to each construct was purposefully developed as there were no such lexica already available in the literature. Such lexica were built by starting from a core list of terms closely related to the target construct and then widening them gradually through synonyms and closely associated terms as singled out by vocabularies until completion of a target quota of 30 items for each construct. Developing richer lexica for the constructs and testing them on a larger number of datasets is another important line for future research. An additional limitation related to the lexica is that the list of synonyms for ‘restrain’ and ‘must’, and for ‘indulge’ and ‘want’, respectively, partially overlap. Although such overlap is limited and not critical for our results, that are robust against the omission of specific high-frequency words (and a fortiori against the omission of specific low-frequency ones), this may have lowered the statistical power of our analysis.

The main promise that we see in our research is its potential contribution to a transdisciplinary platform for the analysis of long-term social trends in the context of the tightness-looseness paradigm. The sociological literature has for instance devoted ample attention to long-term social trends related to (self-)control vs. permissiveness, but most such studies have relied on qualitative methodologies applied to relatively small samples. The possibility to analyze large corpora of texts spanning very long periods, however, paves the way to new analytical approaches that build upon established quantitative techniques that are largely compatible with multiple disciplinary perspectives, including economic psychology, computational social science, social and cultural psychology, cultural anthropology and, of course, cultural sociology itself.

Our brief review of the relevant literature has shown that several new lines of research are emerging that make use of these techniques and that are providing new insights on a variety of highly relevant issues in several areas of research. In particular, our research contributes to the growing body of literature that explores the interpretive and explanatory potential of the tightness-looseness paradigm that is increasingly being recognized as a fruitful conceptual perspective in the analysis of large-scale social trends and of the genesis, evolution and effects of social norms. However, this literature is still in its early phase, so that studies such as the present one can be regarded as preliminary investigations that will hopefully be conducive to additional research and contribute to building and solidifying a new, cross-disciplinary analytical toolbox. The ultimate goal is the gradual development of a body of consilient analytical results from multiple disciplinary angles, which would provide a significant step forward in our understanding of complex social phenomena. We look forward to this promising perspective.

Compliance with ethical standards

Funding: no funding was received for conducting this study.

Conflict of interest: the authors have no competing interest to declare that are relevant to the content of this article.

Data availability statement: the data analyzed in the current study are from the publicly accessible English Google Books online repository, <https://books.google.com/ngrams>.

References

Acerbi A, Lamos V, Garnett P, Bentley RA (2013) The expression of emotions in 20th century books. *PLoS ONE* 8(3): e59030.

Achtziger A, Alós-Ferrer C, Wagner AK (2018) Social preferences and self-control. *Journal of Behavioral and Experimental Economics* 74, 161-166.

Akamatsu N, Fukuda R (2021) When a prior indulgent choice promotes a subsequent indulgent choice: The justification mechanism. *Psychology and Marketing*, advance online publication, <https://onlinelibrary.wiley.com/doi/10.1002/mar.21621>.

Allyn D (2000) *Make love, not war. The sexual revolution: An unfettered history*. Little, Brown and Co., New York.

Bartolini S, Bonatti L, Sarracino F (2014) The Great Recession and the bulimia of US consumers: Deep causes and possible ways out. *Cambridge Journal of Economics* 38(5), 1015-1042.

Batra RK, Ghoshal T (2017) Fill up your senses: A theory of self-worth restoration through high-intensity sensory consumption. *Journal of Consumer Research* 44(4), 916-938.

Bentley RA, Acerbi A, Ormerod P, Lamos V (2014) Books average previous decade of economic misery. *PLoS ONE* 9(1): e83147.

Berman M (2009) *The politics of authenticity. Radical individualism and the emergence of modern society*. Verso Books, London.

Brand CO, Acerbi A, Mesoudi A (2019) Cultural evolution of emotional expression in 50 years of song lyrics. *Evolutionary Human Sciences* 1, e11.

Chen Y, Yan F (2016) Economic performance and public concerns about social class in twentieth-century books. *Social Science Research* 59, 37-51.

Clarkson JJ, Janiszewski C, Cinelli MD (2013) The desire for consumption knowledge. *Journal of Consumer Research* 39(6), 1313-1329.

Collins M (2019) Permissiveness on trial: Sex, drugs, rock, the Rolling Stones, and the Sixties counterculture. *Popular Music and Society* 49(2), 188-209.

Cross G (2000) *An all-consuming century. Why commercialism won in modern America*. Columbia University Press, New York.

Dissanayake E (1995) *Homo aestheticus. Where art comes from and why*. University of Washington Press, Seattle.

Dutta R, Levine DK, Papageorge NW, Wu L (2018) Entertaining Malthus: Bread, circuses, and economic growth. *Economic Inquiry* 56(1), 358-380.

Eisenberg IW, Bissett PG, Enkavi AZ, Li J, MacKinnon DP, Marsch LA, Poldrack LA (2019) Uncovering the structure of self-regulation through data-driven ontology discovery. *Nature Communications* 10, 2319.

Fellner WJ, Goehmann B (2020) Human needs, consumerism and welfare. *Cambridge Journal of Economics* 44(2), 303-318.

Frank T (1998) *The conquest of cool: Business culture, counterculture, and the rise of hip consumerism*. University of Chicago Press, Chicago.

Gandhi M.K. (1947) *Self-restraint vs. self-indulgence*. Navajivan Publishing House, Ahmedabad (original edition 1928).

Gelfand M, Nishii LH, Raver JL (2006) On the nature and importance of cultural tightness-looseness. *Journal of Applied Psychology* 91(6), 1225-1244.

Gelfand M et al (2011) Differences between tight and loose cultures: A 33-nation study. *Science* 332(6033), 1100-1104.

Gelfand M, Harrington JR, Jackson JC (2017) The strength of social norms across human groups. *Perspectives on Psychological Science* 12(5), 800-809.

Gómez-Miñambres J, Schniter E (2017) Emotional calibration of self-control. *Journal of Behavioral and Experimental Economics* 68, 110-118.

Greenfield PM (2013) The changing psychology of culture from 1800 through 2000. *Psychological Science* 24(9), 1722-1731.

Hamamura T, Xu Y (2015) Changes in Chinese culture as examined through changes in personal pronoun usage. *Journal of Cross-Cultural Psychology* 46(7), 930-941.

Harrington JR, Boski P, Gelfand M (2015) Culture and national well-being: Should societies emphasize freedom or constraint? *PLoS ONE* 10(6): e0127173.

Hertwig R, Grüne-Yanoff T (2017) Nudging and boosting: Steering or empowering good decisions. *Perspectives on Psychological Science* 12(6), 973-986.

Horváth C, Büttner OB, Belei N, Adigüzel F (2015) Balancing the balance: Self-control mechanisms and compulsive buying. *Journal of Economic Psychology* 49, 120-132.

Koplenig A (2017) The impact of lacking metadata for the measurement of cultural and linguistic change using the Google Ngram data sets—Reconstructing the composition of the German corpus in times of WWII. *Digital Scholarship in the Humanities*, 32(1), 169-188.

Jackson JC, Gelfand M, De S, Fox A (2019) The loosening of American culture over 200 years is associated with a creativity-order trade-off. *Nature Human Behavior* 3, 244-250.

Jezkova Isaksen K, Roper S (2012) The commodification of self-esteem: Branding and British teenagers. *Psychology and Marketing* 29(3), 117-135.

Joosten A, van Dijke M, Van Hiel A, De Cremer D (2015) Out of control!? How loss of self-control influences prosocial behavior: The role of power and moral values. *PLoS ONE* 10(5): e0126377.

Kennedy M (2020) *Imaginary economies: Narratives for the 21st century*. In J Fischer, G Stedman (eds) *Imagined economies | real fictions*. [transcript] Verlag, Bielefeld, 157-174.

Kesebir P, Kesebir S (2012) The cultural salience of moral character and virtue declined in twentieth century America. *Journal of Positive Psychology* 7(6), 471-480.

Khamis S (2019) The aestheticization of restraint: The popular appeal of de-cluttering after the global financial crisis. *Journal of Consumer Culture* 19(4), 513-531.

Lasch C (1978) *The culture of narcissism: American life in an age of diminishing expectations*. WW Norton, New York.

Lash S, Lury C (2007) *Global culture industry: The mediation of things*. Polity Press, Cambridge.

Lee MJ (1993) *Consumer culture reborn. The cultural politics of consumption*. Routledge, London.

Lee YK, Weaver K, Garcia SM (2016) I'll have fries with that: Increasing choice complexity promotes indulgent food choices. *Psychology and Marketing* 33(7): 505-515.

Lin Y et al (2012) Syntactic Annotations for the Google Books NGram Corpus. *Proceedings of the ACL 2012 System Demonstrations*, 169-174.

Mandel N, Scott ML, Kim S, Sinha RK (2017) Strategies for improving self-control among naïve, sophisticated and time-consistent consumers. *Journal of Economic Psychology* 60, 109-125.

Martel F (2010) *Mainstream: Enquête sur cette culture qui plait à tout le monde*. Flammarion, Paris.

Martinsson P, Myrseth KOR, Wollbrant C (2014) Social dilemmas: When self-control benefits cooperation. *Journal of Economic Psychology* 45, 213-236.

Merchant A, LaTour KA, Ford JB, LaTour MS (2018) Should Cookie Monster adopt a healthy lifestyle or continue to indulge? Insights into brand icons. *Psychology and Marketing* 35(1): 64-78.

Michel JB et al (2011) Quantitative analysis of culture using millions of digitized books. *Science* 331(6014), 176-182.

Miles S (1998) *Consumerism – as a way of life*. Sage, London.

Milios L (2018) Advancing to a circular economy: Three essential ingredients for a comprehensive policy mix. *Sustainability Science* 13, 861-878.

Miller T (2011) *The hippies and American values*, second edition. The University of Tennessee Press, Knoxville TN.

Möckel B (2019) Consuming anti-consumerism: The German fairtrade movement and the ambivalent legacy of '1968'. *Contemporary European History* 28(4), 550-565.

Moffitt TE, Arseneault L, Belsky D, Dickson N, Hancox RJ, Harrington HL, Houts R, Poulton R, Roberts BW, Ross S, Sears MR, Thomson WM, Caspi A (2011) A gradient of childhood self-control predicts health, wealth, and public safety. *Proceedings of the National Academy of Sciences* 108(7), 2693-2698.

Molleda JC (2010) Authenticity and the construct's dimensions in public relations and communications research. *Journal of Communication Management* 14(3), 223-236.

Morin O, Acerbi A (2017) Birth of the cool: A two-centuries decline in emotional expression in Anglophone fiction. *Cognition and Emotion* 31(8), 1663-1675.

Quinn JM, Pascoe A, Wood W, Neal DT (2010) Can't control yourself? Monitor these bad habits. *Personality and Social Psychology Bulletin* 36(4), 499-511.

Rey-Ares L, Fernández-López S, Castro-González S, Rodeiro-Pazos D (2021) Does self-control constitute a driver of millennials' financial behaviors and attitudes? *Journal of Behavioral and Experimental Economics* 93, 101702.

Roth S, Clark C, Trofimov N, Mkrtichyan A, Heidingsfelder M, Appignanesi L, Pérez-Valls M, Berkel I, Kaivo-oja J (2017) Future of a distributed memory. A global brain wave measurement (1800-2000). *Technological Forecasting and Social Change* 118, 307-323.

Roth S, Schwede P, Valentinov V, Zazar K, Kaivo-oja J (2019) Big data insights into macro social trends (1800-2000): A replication study. *Technological Forecasting and Social Change* 149, 119759.

Sandlin JA, Milam, JL (2008) "Mixing (pop) culture and politics": Cultural resistance, culture jamming, and anti-consumption activism as critical public pedagogy. *Curriculum Inquiry* 38(3), 323-350.

Serazio M (2017) Branding politics: Emotion, authenticity, and the marketing culture of American political communication. *Journal of Consumer Culture* 17(2), 225-241.

Shilton D, Breski M, Dor D, Jablonka E (2020) Human social evolution: self-domestication or self-control? *Frontiers in Psychology* 11, 134.

Sindi SS, Dale R (2016) Culturomics as a data playground for tests of selection: Mathematical approaches to detecting selection in word use. *Journal of Theoretical Biology* 405, 140-149.

Sivanathan N, Pettit NC (2010) Protecting the self through consumption: Status goods as affirmational commodities. *Journal of Experimental Social Psychology* 46(3), 564-570.

Sommer D, Sacco (2019) Optimism of the will. Antonio Gramsci takes in Max Weber. *Sustainability* 11(3), 688.

Stearns PN (2006) *Consumerism in world history. The global transformation of desire*, second edition. Routledge, London.

Tezer A, Sobol K (2021) "My life is a mess, I deserve a brownie". Justifying indulgence by overstating the severity of life problems. *Psychology and Marketing* 38(9), 1393-1403.

Thompson P, van der Broek D (2010) Managerial control and workplace regimes: An introduction. *Work, Employment and Society* 24(3), 1-12.

Twenge JM, Campbell WK, Gentile B (2012a) Increase in individualistic words and phrases in American books, 1960-2008. *PLoS ONE* 7(7): e40181.

Twenge JM, Campbell WK, Gentile B (2012b) Male and female pronoun use in US books reflects women's status, 1900-2008. *Sex Roles* 67, 488-493.

Twenge JM, Campbell WK, Gentile B (2013) Changes in pronoun use in American books and the rise of individualism, 1960-2008. *Journal of Cross-Cultural Psychology* 44(3), 406-415.

Ugur ZB (2021) Does self-control foster generosity? Evidence from ego depleted children. *Journal of Behavioral and Experimental Economics* 90, 101652.

Varga S, Guignon C (2020) Authenticity, in Zalta EN (ed), *The Stanford Encyclopedia of Philosophy* (Spring 2020 Edition), <https://plato.stanford.edu/archives/spr2020/entries/authenticity/>.

Watson DL, Tharp RG (2014) *Self-directed behavior. Self-modification for personal adjustment, tenth edition*. Wadsworth, Belmont CA.

Watkins JP (2015) Economic waste and social provisioning: Veblen and Keynes on the wealth effect. *Journal of Economic Issues* 49(2), 441-448.

Whiting J, Hannam K (2015) Creativity, self-expression and leisure. *Leisure Studies* 34(3), 372-384.

Windsor D (2009) Tightening corporate governance. *Journal of International Business* 15(3), 303-316.

Wisman JD (2019) Adam Smith and Thorstein Veblen on the pursuit of status through consumption versus work. *Cambridge Journal of Economics* 43(1), 17-36.

Ye S, Cai S, Chen C, Wan Q, Qian X (2018) How have males and females been described over the past two centuries? An analysis of Big-Five personality-related adjectives in Google English Books. *Journal of Research in Personality* 76, 6-16.

Zeng R, Greenfield PM (2015) Cultural evolution over the last 40 years in China: Using the Google Ngram viewer to study implications of social and political change for cultural values. *International Journal of Psychology* 50(1), 47-55.

Zou HF (1994) 'The spirit of capitalism' and long-run growth. *European Journal of Political Economy* 10(2), 279-293.

Zukin S, Smith Maguire J (2004) Consumers and consumption. *Annual Review of Sociology* 30, 173-197.