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The Impact of Covid-19 on Subjective Well-Being

A Comparative Analysis of Western Europe and Latin America

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The Impact of Covid-19 on Subjective Well-Being:

A comparative analysis of Western Europe and Latin America

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ABSTRACT

Subjective Well-being (SWB), which is becoming increasingly important in measuring the success of a civilisation, has been challenged in 2020 with the implementation of **measures** aiming at limiting the spread of **Covid-19**.

This paper will combine the literature on the progress made in **measuring SWB** and the **factors** influencing it, in **Latin America** and **Western Europe**, with a measurement of the impact of **Covid-19** (and its containment measures) on SWB. Coronavirus and health crisis measures, such as social distancing, could help to determine the extent to which **interpersonal relationships** play an important role in determining the level of happiness across countries and **cultures**.

Using the **Subjective Well-Being evolution in 2020**, in Latin America and Western Europe, along with the **Stringency Index** of coronavirus containment measures, this research finds that **SWB in Western Europe was more resilient** in 2020. Although we failed to link this evolution to the level of SI, we find that **culture** had an impact in determining the factors that **influenced** the SWB in 2020. Among the key factors explaining the more pronounced negative evolution in LA is **social support**.

This leads to various implications, mainly demonstrating the importance of accounting more for the social support in SWB measures, and the **balance of affects** in happiness measurements.

Key words: Subjective Well-Being, Happiness, Life Ladder Evaluation, Balance of Affects, Culture, Latin America, Western Europe, Covid-19, Stringency Index, Social Support

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In addition, special praise to the Gallup World Poll and World Happiness Report researchers who are the first to have a world representative sample. And further thanks to the researchers at Gallup World Poll and World Happiness Report for granting readers free access to these ground-breaking data and results.

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LIST OF ABBREVIATIONS

BOA – Balance of Affects

HH – Household

LA – Latin America

LLE – Life Ladder Evaluation

NA – Negative Affect

OxCGRT – Oxford Covid-19 Government Response Tracker

PA – Positive Affect

SI – Stringency Index

SWB – Subjective Well-Being

WE – Western Europe

WHR – World Happiness Report

INTRODUCTION

While the most common answer to the question "**what do you most desire in life**?" is "**happiness**", in 2021, researchers are still struggling to **define** and study this topic.

This research will first seek to define Subjective Well-Being (SWB) and its **components** as well as the different **factors influencing** it. The remainder of this research will focus on the distinctions that can be made between **Latin and Western cultures**, seeking to link these characteristics to factors that predict subjective well-being.

Thereafter, the research will tackle the emergence of **covid-19** and its **implication** for happiness levels. Regardless of social status, age, sex or country all have been impacted by the coronavirus. This impact has often been reflected in our **state of mind**. For some more than others, this impact was negative.

In this research we analyse the impact of the most globally implemented policies of recent years, the **containment measures**. If often the success of a policy was measured by economic indicators, here governments measured their success by the evolution of the pandemic on the national territory. But what if, in doing so, governments had forgotten to take into account other aspects, which in turn would considerably moderate the positive impact of these policies? We are thinking in particular about their **impact on the SWB**. We wonder whether there would be more **resilience** within certain cultures, whether certain **factors** could help to explain or **predict** the **evolution of SWB**? In this research, we sought to c**ompare the evolution of Subjective Well-Being within Latin America and Western Europe**, leading to the following research question:

DID THE CORONAVIRUS CONTAINMENT MEASURES IMPACT THE SUBJECTIVE WELL-BEING, AND ITS COMPONENTS, TO A DIFFERENT EXTENT IN LATIN AMERICA AND WESTERN EUROPE?

In order to address this question, we used a simple model, combining **first difference** with **simple regression**. We mainly used **data** from the **Gallup World Poll** and the **World Happiness Report** as a measure of the level of SWB (as well as LLE and BOA) per country. For the measure of **covid-19**, we used the **Stringency Index**, from OxCGRT.

Although the 2021 World Happiness Report attempted to highlight the effects of covid-19 on subjective well-being, the report did not attempt to **quantify** its impact, neither did it seek to link the SWB to the **culture**. Thus, this thesis takes a more quantitative and novel look at subjective well-being.

Furthermore, this research analyses in detail the different **components** of Subjective Well-Being, namely the life ladder evaluation and the balance of affects, placing greater importance on the **psychological** aspect of SWB, which is often left out of the research.

PART I: LITERATURE REVIEW

INTRODUCTION

The Subjective Well-Being has long been neglected by researchers in favour of other areas which mattered more in their eyes, such as freedom, creativity and growth. Back then, happiness was not seen as a worthwhile goal (Veenhoven, 1984).

Today, among the **indicators** that determine the **quality of life** in a society are the magnitude of **happiness** as well as the life satisfaction experienced by the population (Diener and Lucas, 2000). Ensuring the happiness of as many people as possible is one of the duties of any **government**. Many current western welfare states consider happiness one of their ideological ingredients. Hence the importance of studying this concept further, with a view to developing theories and policies that can be used to create a better society (Diener and Lucas, 2000).

Despite this recognized importance and since happiness has among its consequences: **commitment** (both at work and in leisure time), **social acceptance** and **better physical health**, which consequently lengthens life expectancy (Veenhoven, 2010), it is surprising that more research and measures are not put in place to foster happiness.

The emergence of the coronavirus pandemic, however, seems to have triggered a change. Indeed, research proves that the frequency of **negative emotions** felt was much higher in 2020. On average, Helliwell et al. (2021) observed a 10% increase in the feeling of sadness (from 23.2% to 26.1%) between our baseline (2017-2019) and 2020. For worry, it is 8% more (from 38.4% to 41.5% of the population). We assume that these negative emotions are one of the **side effects** of the **emergence** of **covid-19** and the **social distancing measures** implemented by governments. Therefore, we wonder to what extent negative emotions may be related to Covid-19 and its containment measures.

This research's first section will begin with a better understanding of happiness and its **components**, as well as its **measurement** and the **limits** encountered in this process. Then, the **factors** that have an impact on the level of happiness as well as the global **ranking** of the happiest countries will be addressed. Secondly, we will explore **culture**, especially the cultures of **Western Europe** and **Latin America**. In order to compare them, we will present an analysis of the **culture dimensions**. Afterwards, we will discuss the **Latin American Paradox** and its implication in the importance of taking culture into account in the measurement of happiness. Next, we will analyse the **migration experiment** in order to determine the potential role of culture characteristics. Finally, the emergence of the **Covid-19** will be discussed, and we will consider its potential impact on the **2020 happiness ranking**. All of these

points will finally be reviewed in order to draw conclusions about the implication of culture on measures of happiness.

1. SUBJECTIVE WELL-BEING (SWB)

This first section is dedicated to the study of the concept of subjective well-being, more commonly known as "happiness".

1.1. MEANING

One of the most controversial issues in well-being research is the **definition**, investigation, and translation of the term "**happiness**." The concept "happiness" is used to describe a **subjective state of mind**. This subjective state is the overall **appreciation of one's life**, as a whole (Veenhoven, 2012). The term "happiness" is interpreted differently from one country to another and is not necessarily stable over time. Nevertheless, the definition most often attributed to it remains **psychological**, i.e. related to an inner state, feeling or attitude (Delle Fave et al., 2016).

Also, the concept may be interchangeable with the concept "**subjective well-being**" (SWB). Nevertheless, Diener (1984) argued for a more common use of SWB because the word happiness was too ambiguous. A lot of research also uses the concept "**life satisfaction**" interchangeably, but wrongly. Indeed, happiness or SWB is composed of various components. Thus, life satisfaction is not equal to SWB, it is only one of the two **components** of SWB.

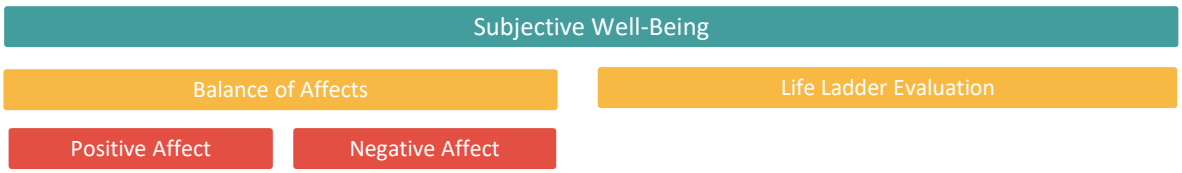
But what are these components of the SWB?

1.2. COMPONENTS OF THE SUBJECTIVE WELL-BEING

While many research studies misuse the different names of SWB, this research will not.

Under the vague term subjective well-being used in this report actually lie **three main indicators**: **life ladder evaluation**, **positive affect**, and **negative affect**. These last two components together form the **balance of affects**. Below is an explanatory figure. Hereafter, we will present each of these components.

Figure 1 - Subjective Well-Being Components



Source: World Happiness Report (2021)

1.2.1. LIFE LADDER EVALUATION (LLE)

The **Life Ladder Evaluation** (LLE) is more of a cognitive component. It can be described as the level of **contentment**, i.e. the perceived difference between what we have and what we want in life. Contentment, or life satisfaction, depends on our ability to satisfy **desires**. Our desires are partly determined by the current standards of the good life. These standards vary and depend on **culture** and **time**. For example, nowadays the desire for material comfort is higher than that of our ancestors, but it is also higher in American companies than in native tribes (Veenhoven, 1984).

This component tends to be used more for **international comparisons** as it allows for a comparison of **quality of life** and offers a more consistent and less volatile result over time. For this reason, most research focuses mainly on this aspect.

This evaluation is measured by the **Gallup World Poll** by asking respondents to rate their life, based on various question, on a scale of 0 to 10. 0 being the worst possible rating, 10 the best (Helliwell et al. 2021). It is also in this component that the results differ the most between countries.

1.2.2. BALANCE OF AFFECTS (BOA)

Regarding the second part, which is more of an **affective** component, Veenhoven (2010) also refers to it as the hedonic **level of affect**, which is how well someone feels, in general. The balance of positive and negative affects felt which in turn will affect mood. This concept is mainly **unconscious**. The **hedonic** level, it is the degree to which the affects felt by a person are pleasant or unpleasant.

Diener, Harte rand Arora (2010) associate BOA with the fullfilment of **psychological needs** such as learning, autonomy, using one's skills, respect, and the ability to count on others in an emergency.

This second part is therefore composed of two sub-sections. On the one hand, positive emotions, on the other hand, negative emotions. **Affect and experienced well-being** are measured by means of questions on **emotions** felt during the last few days and the answer to the questions is limited to "yes" or "no" (OECD, 2020).

Positive emotions, or positive affect, are measured by **Gallup World Poll** by asking whether the person smiled or laughed a lot and whether they felt a lot of enjoyment during the previous day.

In contrast, negative emotions, or negative affect, are measured by the frequency of feeling worry, sadness and anger during the previous day (Helliwell et al. (2021).

1.2.3. CONCLUSION

The balance of affects is less representative of the general state of well-being as it is more likely to be **affected by external events**. Also, overall, the LLE is the simplest to predict and therefore measure

(Diener, Harter and Arora, 2010). For these reasons, although BAO and LLE predict different aspects of SWB, **life evaluation is often preferred** for cross country comparisons. In the appendix (Table 17 – Zero-Order Correlations Between Types of Well-Being and Predictors), you will find a summary table of correlations between SWB Components and various predictors.

Thus, life satisfaction and balance of affects are perceived as two different concepts. The first is based on **thinking** and is **voluntary**, it is perceived as the rational part. While the second is based more on **feeling** and is **involuntary**, it is perceived as the emotional part of happiness. Nevertheless, both are highly correlated (0.19 in Latin America, i.e. less than the 0.32 correlation in Anglo-Saxon and 0.28 in Western European countries) and together allow for the measurement of overall happiness, the either/or approach in measuring happiness is not possible (Veenhoven, 2010; Delle Fave et al., 2016).

1.3. HAPPINESS MEASUREMENT AND ITS LIMITS

Happiness, as described above, is a self-judgment, the existing literature suggests that all humans tend to evaluate how much they value their lives (Veenhoven, 2010). Evaluation cannot be based on an external judgement because happiness cannot be observed. As a result, the measurement of happiness entails the need to penetrate one's mind. This is only possible through **questioning** (OECD, 2020). Today it is **Gallup World Poll**, the leader in well-being survey data and analysis, that dictates the rhythm of happiness surveys. In 2020, in collaboration with **The World Happiness Report**, 156 countries were ranked, based on an average of three years of surveys between 2017 and 2019. The respondents are citizens over 15 years of age. Each year an average of 1,000 people is surveyed per country (World Happiness Report, 2020). Their survey is based on the **Cantril ladder** of a **universal questionnaire**, the questions contained combine subjective well-being and people's self-assessments of the most important objective determinants of **subjective well-being**. Thus, the direct questions include the person's **socio-economic background, health, migration, civic engagement, material living conditions** and **law and order**. These will be tackled in 1.4 below.

However, this type of questionnaire poses several **problems**.

1.3.1. VALIDITY PROBLEMS

The main concern in the **validity** problem is **consistency**. In fact, the presence of different components (balance of affect and life satisfaction) in overall happiness and the lack of awareness of this **distinction** by the respondent causes that the answers given are not always related to the right component (Veenhoven, 1984; Helliwell et al., 2021). Furthermore, concepts and questions, once **translated** into other languages, can take on different interpretations, leading to **cultural bias**. In Dutch, for example, "happiness" is translated as "geluk", yet this word has almost no emotional

undertones, it is more a matter of life satisfaction. Also, **social norms** and **social desirability** related to happiness are a source of bias. It has been shown that in countries where happiness is socially highly desirable, respondents are more likely to answer that they are happy without actually being happy (Veenhoven, 2012). In addition, happiness may not be very stable over time, when questions are asked several times, it is common for the answer to change. Surveys often call upon feelings felt 'yesterday', the aim being to reduce the bias of hindsight. However, in doing so, the impact of unusual events is greater, although minimised in the case of large samples (OECD, 2020). Data on affective experiences collected through **Time Use Surveys** are likely to yield the most accurate and useful results but are currently available in only very few OECD countries and the data collection methods are not harmonised (OECD, 2013; OECD 2020). Finally, a **distortion** phenomenon is also observed. Some respondents, out of shame or private concern, tend to avoid their unhappiness by attributing higher rates to their lives (Veenhoven, 1984).

1.3.2. RELIABILITY PROBLEMS

Measurement errors are almost inevitable in survey data. This problem is further accentuated by the lack of **harmonisation** at the global level for surveys reporting subjective well-being (Exton et al., 2015). For this reason, the OECD published **Guidelines on Measuring Subjective Well-Being** in 2013, which, by improving the quality of the data collected and their **comparability**, should have the effect of reducing the importance of this measurement bias.

Then comes the bias relating to the **conditions** under which the interview took place. Despite harmonisation in data collection, Gallup World Poll, the world leader in happiness surveys, is still forced to use different types of interviews depending on the country and its level of development. **Telephone surveys** (approximately 30 minutes) are used in countries with wide telephone coverage (especially Europe), while **face-to-face interviews** (approximately 1 hour) are preferred for developing countries (such as those in Latin America) (Gallup, 2021). The conditions under which the interview is conducted strongly influence the responses. These include the **location**, the **interviewer** and the **turn of phrase**. Although, according to Veenhoven (2012), this bias seems to be neutralized in large samples and should therefore not cause problems when comparing results, the existence of a different type of interview between countries may be a source of bias.

1.3.3. CONCLUSION

In conclusion, despite harmonisation, the lack of regularity in data collection and the presence of problems of validity and reliability make it **difficult to compare** the data collected (OECD, 2020).

Moreover, the use of qualitative data with a view to making a **quantitative comparison** does not help with validity problems (Gallup, 2021; Helliwell et al., 2021).

1.4. SUBJECTIVE WELL-BEING AND LIVING CONDITIONS

There are currently great **disparities** in average happiness levels in different parts of the **world**. People in Asia and Africa are generally the least happy, while people in Western countries tend to be the most satisfied with life (Veenhoven, 2010). The fact that some countries are consistently in the top rankings of happiness is partly due to their **societal characteristics**. Alongside these, other factors such as **individual characteristics** and **interpersonal bonds** seem to play a role in the differences in subjective well-being among one nation.

1.4.1. SOCIETAL CHARACTERISTICS

The existing literature finds that **societal** characteristics are the characteristics with the **greatest impact** on the level of SWB. Also, these characteristics are often seen as **universal**.

A. ECONOMIC CONDITIONS

Cantril (1965), argued that the differences in the level of happiness from one country to another are mainly due to their **economic development**, with a correlation of +.67.

Although previous studies show that the **GDP** is positively correlated with the level of happiness (Veenhoven, 1984). Diener, Harter and Arora (2010) find that even after controlling for individual income, national income predicts LLE. This relationship remains to be contrasted, as the correlation seems to be **stronger in poorer countries** than in richer ones. Cultural differences could be involved in the variation in correlation. For example, Latin American countries show a much lower correlation, this phenomenon is known as Latin Paradox and will be developed in 2.4 below.

Cantril also observes that the lower level of happiness in poor countries is a consequence of globalisation and a tendency to compare one's life to western standards. Diener, Harter and Arora (2010) also find that people tend to evaluate their life and income based on a **"global standard"**. Without this global standard, we would not have found such a strong cross-national correlation between LLE and income. Poor countries therefore describe themselves as underdeveloped in terms of possible life satisfaction. Pinhey, Rubinstein and Colfax (1997) as well as Veenhoven (2012), in this view, defines happiness as a **'reflected appraisal'**. We tend to be positive about our life when people around us deem us to be well off and negative when others see us as losers. In this vein the lower happiness in poor countries could be explained as the result of labelling.

B. POLITICAL CONDITIONS

Political conditions include political **freedom**, **democracy,** and **political unrest**. It is often argued that democracy is the best way to achieve the greatest happiness for the greatest number of people. There is evidence that democracy, overall, adds to the appreciation of life (Inglehart et al., 2008; Helliwell et al. 2013). **Corruption** is often seen as the hand holding back happiness in particular in Latin American countries. As for the political unrest, it is on the one hand seen as negatively correlated with happiness and on the other hand, evidence from the literature suggests that unhappiness could also be at the source of the political unrest.

We can further analyse and political conditions through **institutional trust**. Indeed, Barrafrem, Tinghög and Västfjäll (2021) have found that, during the **covid-19** pandemic, the trust one placed in one's government to deal with **healthcare** challenges has had a significant direct impact on individuals' overall well-being. Their findings are consistent with the previous research on trust and welfare (Knack and Keefer, 1997; Putnam et al., 1994; Zak and Knack, 2001).

C. REGIONAL DIFFERENCES

Finally, depending on the **area** of residence, the level of happiness within the same country will also be impacted.

In more developed countries, in Western Europe, the level of happiness is higher in **rural** areas. In non-developed or emerging countries, such as in Africa or Latin America, the trend is reversed. It is in **urban** areas that happiness is highest (Helliwell, 2018).

D. CONCLUSION

Societal characteristics already account for many of the factors that explain differences in SWB levels across countries. Although many of these factors have a universal impact on the SWB, the **country** and **region** still have a **moderating** role in some relationships.

1.4.2. INDIVIDUAL CHARACTERISTICS

Beyond society characteristics, **individual characteristics** have also been shown to have an incidence on people's level of happiness. Living conditions are rarely the same for all members of society, which explains the variance in results within the country.

A. AGE

According to Veenhoven (1984) happiness would seem to be relatively independent of age and may even be **higher at the extremes**. More recent research also concluded that there is a relationship

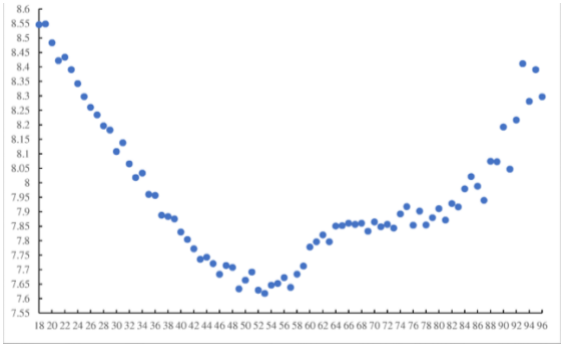
between age and subjective well-being. This relationship is **U-shaped**, at least in Latin America, East Europe and Asia (Blanchflower and Oswald, 2008). That is, subjective well-being seems to **peak at around 52.9 years** and then falls until death.

It should be noted, however, that people born at the same time, deemed to be good or bad, will show a more similar level of SWB. This is the **cohort phenomenon**. When this is taken into account in the regressions, the U-shape is less pronounced. Indeed, the peak is then at 38.6 years.

Other researchers find that this U-shape is to be nuanced for the various aspects of the SWB. Indeed, life satisfaction seems to decrease among people over 70 years old. While negative affect seems to be at its lowest between 60-69 years. It then becomes stable after 70 years and slightly decreasing after 75 years. Positive affect decreases with age (Hansen and Slagsvold, 2012).

Jebb, Tay and Diener (2020) found only small differences in life satisfaction and negative affect. Overall, life satisfaction is decreasing but positive affect is the one that decreases the most, while negative affect has a more random change. Also, it appears that the richest countries have the smallest increase in negative affect. On another note, Lansford (2018) suggests that high-income countries, such as those in Western Europe, have a nadir of SWB between the ages of 45 and 54, while in Latin America, by contrast, SWB seems to decrease gradually with age (Steptoe, Deaton, and Stone, 2015). Whereas Blanchflower (2020) finds that the **U-shape assumption** holds in **developing countries** as well as **advanced countries**. The average age at which the U-shaped minimised across the 477 country-level estimates reported here is **48.3**. The results of this study are presented in Figure 2.

Figure 2 – Happiness across the Lifespan (with controls, 2004-2016)



Source: Banchflower (2020)

Helliwell et al. (2018) and Easterlin conclude that the **U-shape** does exist but simply reflects the **change of one's life**. According to Helliwell et al. (2018), it is the **social context** that will influence this U-shape most. Furthermore, Lansford (2018) addresses these results by pointing out that **personality** can play an important role in the stability of the SWB level.

Summing up, although the authors do not seem to agree on the extent to which the results should be **contrasted**, depending on the **socio-cultural conditions** and the component, all agree that the U-shape is real.

B. GENDER

Among the possible distinctions we find **gender**. Overall, gender **does not seem to impact** the level of happiness of the individual. The few studies that have found different trends do not coincide on the pattern. Indeed, in some countries, women are slightly happier, in others, men are happier. Also, in Western nations, women tend to become less happy as they get older, while men become happier (Veenhoven, 1984). In 2020, Helliwell et al. (2021) found that women, overall, reported slightly higher levels of SWB. Gender therefore does not seem to be a good variable of interest.

C. HEALTH

According Diener et al. (2018) it has become clear that the **link between health conditions and well-being** outcomes is stronger than once thought. There is however still very little up-to-date research and data available.

D. INCOME

If the economic development of the country matters in one's overall happiness, the **income** of each individual also seems to have an influence. Indeed, **rich** people seem to be happier overall than their poorer compatriots. Yet there are some limits to this relationship. **Desirability bias** is one of them, for instance, it is more accepted to describe oneself as unhappy when one is poor than when one is rich (Diener, Harter and Arora, 2010; Veenhoven, 2012).

Diener, Harte and Arora (2010), find income to be a **moderately strong predictor** of **LLE**. Nevertheless, if we look at the **BOA**, it is a **much weaker predictor**. Since past research has focused on LLE, previous results must be scaled down. Also, culture, along with context, influence the relation between SWB and income. Diener et al. (2018) also find that using the log of income, there is less evidence of a curvilinear relationship.

Here again, researchers agree on the importance of the **social comparison effects of income**. Luttmer (2005) finds that an income rise does not undeniably lead to a higher SWB. Indeed, as people's income rises the average rises too, meaning that people compare themselves to a higher standard than before. This social comparison phenomenon **is more pronounced where income inequality is high** (Cheung and Lucas, 2015).

Further research focusing on the **moderating factors of this relationship** will help clarify the processes that account for this complex and widely studied association.

E. EDUCATION AND SOCIAL RANK

Although, on the whole, the level of **education** seems to be positively correlated with the level of happiness, the correlation is somewhat mitigated. This is because the relationship is not always linear, sometimes it levels off at the higher educational levels and sometimes it is U-shaped (Veenhoven, 1984). Moreover, education does not seem to be one of the universal factors influencing happiness. In fact, the correlation rate between education level and happiness varies from -.08 to +.27, depending on the country (Veenhoven, 2012).

Under the term **occupational prestige**, we refer in particular to differences in "skill level" and differences between "manual" and "non-manual" work. Occupational prestige is in itself a source of satisfaction. This correlation ratio varies across the world, although the need for social respect is innate. Furthermore, occupational prestige is also **strongly related to other living conditions** that influence happiness (e.g. income and education). As a result, the correlation is expected to be relatively high but in practice is only **weak** (Inglehart et al. 2008; Veenhoven, 2012).

As for the **global social rank**, it has been shown that people at the bottom of the **social ladder** are generally less satisfied with their lives than people at the top of the social ladder. Here, the dimensions of **'income'**, **'education'** and **'social prestige'** are an integral part of the overall social rank (Inglehart et al. 2008; Veenhoven, 2012).

F. INDIVIDUAL TRAITS

Finally, there are **unique** characteristics such as **general mental effectiveness, physical health, specific abilities** (intelligence, knowledge), **lifestyle** (use of leisure time, consumption patterns, sleeping habit) and personality traits (Veenhoven, 1984; Inglehart et al. 2008). For example, people with a higher level of **control** over their lives demonstrate a higher level of happiness than their peers (Veenhoven, 2010; Gallup, 2021). There is also evidence that **extroverted** people are happier than **introverted** people (Lucas et al., 2000). Neurotics, on the other hand, are universally less happy. These effects vary by culture, with more individualistic cultures tending to place greater emphasis on self-esteem for example (Veenhoven, 2012; Rojas (2018); Helliwell et al., 2021).

G. CONCLUSION

Although individual characteristics **lack consistency** in their correlation with the level of happiness. Their **impact** on the level of happiness is still **significant**, but less pronounced than the societal

characteristics. Moreover, these characteristics and their impact are more prone to **cross-country variation.** Indeed, relations can be opposite from one country to another.

1.4.3. SOCIAL SUPPORT

The literature, which for a long time neglected the importance of **interpersonal relationships** in the level of happiness, reporting only very small impact of intimate ties on the SWB (e.g. Veenhoven, 1984) now focuses more on this phenomenon.

According to Siedlecki et al (2014) and Lansford (2018), **positive social relationships** are the **best predictor** of **SWB**. Also, Helliwell (2020) finds that social support, between 2017 and 2019, accounted for 33% of the cross-country variation in happiness, and is therefore the dimension with the greatest impact. Diener et al. (2018) also find that people who report having a strong network of social relationships also report higher levels of SWB. The relationship could go both ways, however (Lyubomirsky, King, and Diener, 2005). Morrison, Jebb, Tay, and Diener (2017) as well as Lansford (2018) found that **social relationships, feeling pride, having a sense of purpose, and being treated with respect** could steadily predict the level of SWB.

A **strong sense of community belonging** will **moderate** the **U-shape** of the **age** and **SWB** relationship, increasing life satisfaction for those with the most supportive workplaces, families, neighbourhoods, and cities (Helliwell et al., 2018). This is especially true for older people as they often have fewer relationships and therefore less social support (Siedlecki et al., 2014).

The emergence of various **social media** in recent years has been seen as an **opportunity** but also as a **threat** to **relationship quality** (Grieve, Indian, Witteveen, Tolan, and Marrington, 2013; Burke and Kraut, 2016). Indeed, Marttila et al. (2021), for example, find that increased positive social media usage predicts increased **loneliness**, and increased loneliness, in turn, predicts decreased **satisfaction with life**. Hence, research supports a link between Facebook usage and loneliness (Song et al., 2014).

What about marital status and family situation? Being **married** seems to increase the level of happiness. Again, this can be the result of a **desirability bias**. Indeed, unmarried people are commonly seen as less happy than those who are married. Another explanation is that an unhappy person is usually in greater need of social support and could for that reason be more eager to marry and less particular. Finally, in western countries, love and sexuality have gained ground in the area of happiness, at the cost of status and money (Inglehart et al. 2008; Veenhoven, 2012).

All investigations seem to imply that the presence of **children** does not add to the joy in living (Veenhoven, 1984).

CONCLUSION

Intimate ties have long been neglected in the literature on happiness. In addition to having been neglected, the real impact of interpersonal relationships has been misevaluated. Today, intimate ties seem to have a **greater importance** in the level of happiness. We also observe **different trends within cultures**, which remain to be studied in the future.

1.4.4. CONCLUSION

Few studies have sought to distinguish between **cultures** and their **conditions** of happiness. And although these studies seem to find similar conditions for happiness across the world, these conditions do not have the same **degree** of relative importance (Veenhoven, 2010). Moreover, these studies often rely on small samples and comparisons are only made with a limited number of countries/cultures (Exton et al., 2015). Helliwell (2020) finds that, for data collected from 2017 to 2019, **social support** explains 33% of national average life evaluations. Next comes **GDP** per capita, with 25%, followed by healthy **life expectancy** with 20%, **freedom** (13%), **generosity** (5%) and finally **corruption** (4%).

While according to Veenhoven (2012), 75% of the level of subjective well-being is determined by societal characteristics, **25%** of the **cross-country variance** remains unexplained. But then, what is hidden among this 25% and can it be related to the specificities of each culture?

1.5. WORLD HAPPINESS RANKING

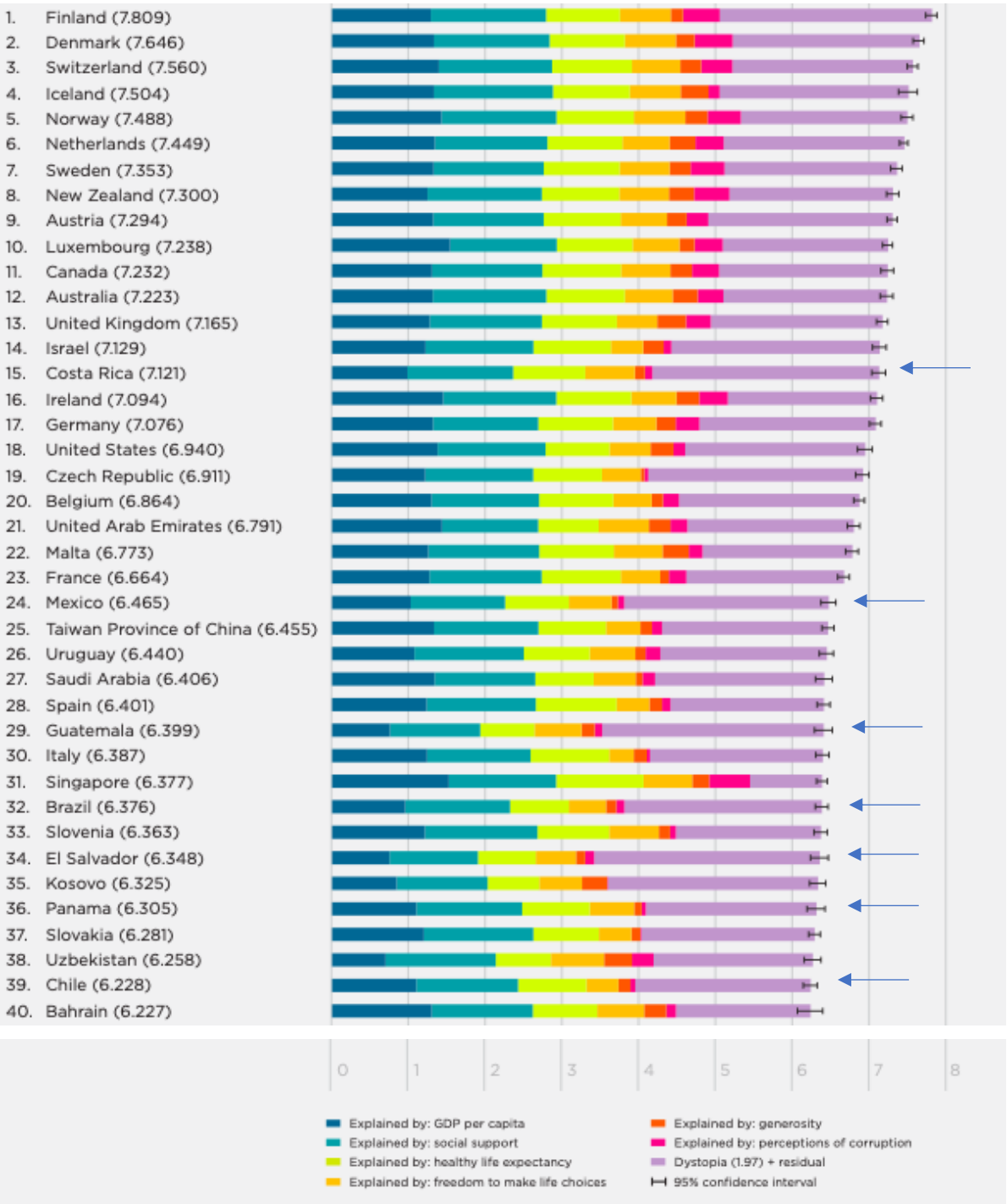
Every year, the **World Happiness Report** releases a ranking of the happiest countries in the world. Over the years, this ranking has proven to be relatively **stable**.

1.5.1. GLOBAL RANKING

The **World Happiness Report**, which is based on data collected from **Gallup World Poll**, groups the various **factors** influencing happiness, which we reviewed earlier in section 2.4. and which are included in the questions of its questionnaire, under six factors: **GDP per capita, social support, healthy life expectancy, freedom to make life choices, generosity, and corruption**. It is these six categories that serve as predictors of life evaluation, and which make it possible to establish the ranking. Besides these six categories we have **dystopia**.

From this ranking we can draw some observations. Here we will focus on **Latin American** countries and **Western European** countries.

Figure 3 - 40 Happiest Countries (2017 – 2019)



Source: World Happiness Report 2020

The first observation that we can draw from the ranking presented above (Figure 3), is that nine of the **top ten** positions are occupied by **European countries**. The first Latin American country in the ranking, Costa Rica, is only in fifteenth place. When we look at the importance of each dimension in the score, we notice a different trend in the **Latin American** countries. Indeed, GDP per capita has a significantly less important role in explaining the level of happiness, compared to the other countries in the

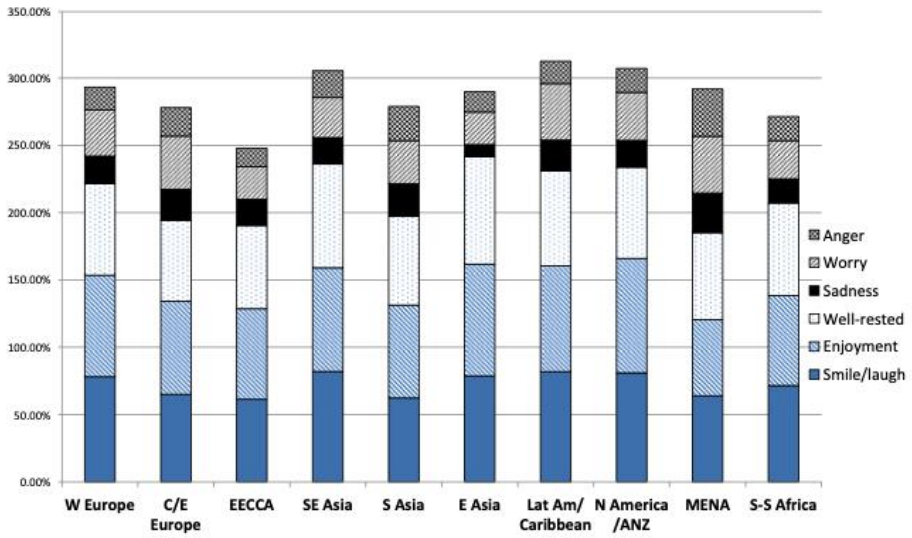
ranking. Also, dystopia is more important in the score of Latin American countries. These observations lead us to believe that **culture** has a certain **influence** on the level of happiness.

1.5.2. BALANCE OF AFFECTS (BOA)

When we focus on the **balance of affects** rather than life ladder evaluation, the rankings are different and leave room for Latin American countries on the podium.

Figure 4 - Population-Weighted Regional Averages of Positive and Negative Experiences Yesterday

2006-2013 pooled results, % of respondents reporting each type of emotion "a lot" yesterday



Source: OECD (2020)

The detailed figures per region for the positive affect can be found it the appendix (Table 18 - Percentage Of Respondents Reporting Having Smiled Or Laughed A Lot Yesterday and Table 19 - Percentage Of Respondents Who Reported Feeling Enjoyment A Lot Yesterday).

As can be observed in Figure 4, **Latin America and the** Caribbean is the region that reports the highest levels of **positive experience**, but also rather moderate negative experiences, demonstrating greater **emotionality** in general (OECD, 2020; Gallup, 2021). This greater emotionality can also be seen in the rate of people who reported smiling a lot and/or experiencing enjoyment the day before. But also, the number of emotions felt, as well negative as positive (Exton et al., 2015).

1.5.3. CONCLUSION

The appearance of different results for Latin America leads us to want to analyse this region further, in order to determine the reason for these **differing region-specific patterns** in the rankings. And thus, perhaps identify a potential **impact of culture** in the evaluation of happiness.

2. CULTURE

Culture was defined by Hofstede and Bond (1988) as "the **collective programming of the mind that distinguishes the members of one category of people from those of another**''. Culture may remain unchanged over time (Dezhu et al., 2015). But the definitions of culture are as numerous as the specificities of a culture. Generally speaking, studies concerning the link between culture and subjective well-being are too globalised and focus very little on comparisons and studies from just a few countries or cultures. Moreover, there is very little interest in Latin America on the part of researchers. Although not properly addressed in the literature, the question of **cultural bias** in the collection of data relating to subjective well-being often arises. Under the term cultural bias, we mean a **measurement error**. It is therefore distinct from **cultural impact**, which is that culture has a significant impact on the way one perceives one's life (Exton et al., 2015). With regard to cultural impact, the existing literature has only focused on dummy variables in order to detect a possible **endogeneity problem** between culture and subjective well-being (Dezhu et al., 2015).

In this research, we will investigate the **cultures** of **Western Europe** and **Latin America**.

2.1. WESTERN EUROPE

The list of countries included in **Western Europe** is not unequivocal, depending on the area of research, the literature tends to be inconsistent. Within the scope of this research, we determine that Western Europe includes the following countries: France, Switzerland, Belgium, the Netherlands, Luxembourg, Germany and Austria as the main geographical core. In addition, we also include the UK and Ireland, and some countries often labelled as part of the Northern Europe geographical area: Iceland, Norway, Denmark, Sweden and Finland (Worldometer, 2021). Southern Europe exhibits relatively different characteristics to the geographic countries of Western and Northern Europe and is therefore excluded from our analysis.

Amongst other features, Western Europe is characterised by the plight of the **individual** rather than the collective, a relatively high degree of **Christianity** and **pluralism**. Western Europe is also recognised as having made strong contributions in areas such as **technology, politics, philosophy** and **art**. Leading to the description of Western Europe as the ultimate state of **modernity** (Chase et al., 2012).

2.2. LATIN AMERICA

With regard to the culture of **Latin America**, although it is a descendant of European immigration, its culture has very distinct specificities from those of Europe. Initially, the countries included are those on the American continent where a **Roman language** predominates. Based on this vague definition,

19 countries are included. Brazil, where Portuguese is spoken and 18 other countries: Argentina, Bolivia, Chile, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay, and Venezuela, where Spanish is spoken (Rojas, 2018). This identification has shortcomings; Puerto Rico, for example, is not included in this list, despite its pronounced Latin culture. For good reason, the island is part of the US territory.

The specificities of the countries of this culture are that no country in the region can be considered as high-income level per capita and Latin America itself **is not a high-income region**. Also, social indicators highlight different social problems in the region such as **corruption, high crime rates** and **high-income inequality**. In addition, there is a great deal of importance devoted to **social life** in general, and especially to the **family** (Rojas, 2018).

2.3. CULTURE DIMENSIONS

In the simplest (and incomplete) studies, some indicators considered when analysing data are included in the form of variable **dummies**. These include **religion, language, and individualistic** and **collectivist** distinctions. It goes without saying that the number of dimensions studied and taken into account to determine a culture is too poor (Dezhu et al., 2015). For example, variable dummies do not allow the identification of several languages or religions within a culture. Furthermore, some countries may share a language or religion without sharing a culture. Additionally, culture is a broad and multifaceted concept. Once it is concluded that culture affects the level of happiness, the difficult task remains to determine which facet(s) of culture is(are) behind this relationship.

Hofstede's model (Hofestede, Hofestede and Minkov, 2010) is more extensive and describes culture through six dimensions: **individualism, power distance, masculinity, uncertainty avoidance, long term orientation and indulgence** (Dezhu et al. 2015; Exton et al., 2015). This model was later revised by the **GLOBE project**, including new dimensions, moving from six to nine dimensions. Namely, **assertiveness orientation, institutional collectivism, humane orientation, performance orientation, and the previously included dimensions, in-group collectivism, future orientation, gender differentiation, power distance, and uncertainty avoidance** (Dezhu et al. 2015).

Each of these dimensions is seen as having a possible impact on the level of happiness. The **individualism/collectivism** dimension, for example, seems to impact the results more than one might think. Indeed, **individualistic countries** are characterised by higher self-esteem and greater optimism, which leads to a **higher level of subjective happiness** (Triandis and Suh, 2002). The degree of correlation between these characteristics and life satisfaction is also affected. In fact, individualistic cultures would seem to have a higher degree of correlation between characteristics such as self-

esteem and autonomy and life satisfaction (Suh, Diener, Oishi and Triandis, 1998; Suh, 2000). Consequently, positive emotions are more important for the subjective well-being in individualistic cultures.

In countries with **collectivist tendencies**, researchers (Bastian et al., 2012; Kitayama, Norasakkunkit and Uchida, 2004) find that the **emotional balance** is **favoured**, and goes hand in hand with the acceptance of difficult circumstances and pain.

Under which categories of the Hofestede model (taken up by the GLOBE project) are Latin America and Western Europe included overall, and on which dimensions do these two cultures differ? Western Europe cannot be represented by a single culture, therefore in the framework of our analysis we will focus on the two most relevant clusters, the **Nordic cluster,** and **the Germanic cluster**.

2.3.1. CULTURE VISUALISATION LATIN AMERICA GROUP

The **Latin American cluster** differs from the other clusters in its high scores in In-Group **Collectivism** and **Power Distance**. Family ties and professional relationships are important. The population accepts the existence of important social inequalities, authority, and status privileges. On the other hand, the dimensions **Future Orientation, Uncertainty Avoidance** and **Institutional Collectivism** are particularly low. The low score in the latter dimension is explained by the fact that societal institutional practices, which aim to distribute resources, are unpopular. **Performance Orientation** is one of the lowest of all clusters. The **Gender Egalitarianism** and **Humane Orientation** dimensions are in the mid-range. The summary table can be found in the appendix Figure 10 - Cultural Practices And Values In The Latin America Group

2.3.2. CULTURE VISUALISATION NORDIC EUROPE GROUP

The **Nordic clust**er is characterised by its high scores in **Institutional Collectivism** and **Uncertainty Avoidance**. Resource sharing is promoted in these companies. **Future Orientation**, although average, is comparatively higher than in other clusters. The Latin American Cluster shows an opposite pattern on these 3 dimensions. **Gender Egalitarianism,** like the **Future Orientation** dimension, is in the medium range but clearly higher than most other clusters, demonstrating that it is less-male dominated than most other clusters. The ratings of **Humane Orientation and Performance Orientation** fall in the middle range. Next to these relatively high scores, the Nordic cluster has low scores on the dimensions of **Assertiveness, Power Distance** and **In-Group Collectivism**. The last two dimensions follow an opposite pattern in the case of Latin America. While the Latin culture emphasises the quality of relationships and is not very concerned about social inequalities, the Nordic countries

are **self-linked** with **fewer familial ties** and do not accept social inequalities. The summary table can be found in the appendix Figure 11 - Cultural Practices And Values In The Nordic Europe Group.

2.3.3. CULTURE VISUALISATION GERMANIC EUROPE GROUP

The third and last cluster we will look at is the **Germanic cluster**. The high scores for this cluster are in the dimensions of **Performance Orientation, Assertiveness, Future Orientation** and **Uncertainty Avoidance.** These scores are similar to those observed in the Nordic cluster and contrast with those of Latin America. The **Power Distance**, although relatively high, does not compare to that observed in Latin America. **Gender Equalitarianism** is, as in the Latin America cluster, relatively low. In the dimensions of **Humane Orientation, In-Group Collectivism** and **Institutional Collectivism**, the results are particularly low. Demonstrating an environment with **little altruism**, caring, limited distribution of resources and little cohesiveness within families and organisations. Instead, this cluster values **competitiveness** and performance. On these dimensions, this cluster is an almost exact opposite of the Latin American cluster. The summary table can be found in the appendix Figure 12 - Cultural Practices And Values In The Germanic Europe Group.

2.3.4. CONCLUSION

Dressing a comparative table of these 3 clusters (see Table 1), we find that the dimensions on which Latin and Western cultures differ the most are: **future orientation, in-group collectivism** and **uncertainty avoidance.** Demonstrating a greater importance of **interpersonal relations** in the Latin culture, and a tendency to **laissez-faire**. Western countries emphasize **individualism** through individual freedom, the pursuit of individual positive emotions and individual achievement. As a result, the link between subjective well-being and individual effort and achievement is more direct. Dezhu et al. (2015) assume that this individualism explains higher levels of happiness in western countries. Latin America, in contrast, attaches more importance to human relations with family, neighbours and colleagues. As a result, happiness in these more collectivist countries would, be dependent on the evaluation of others, thus explaining why collectivist countries appear to be less happy, according to Dezhu et al. (2015). This observation is contrary to the findings of Rojas (2018), who finds that in Latin America, interpersonal relationships actually increase happiness. This difference in judgement can be explained by the lack of distinction between the different cultures in collectivist countries, which Dezhu et al. (2015) reported in their study, studying Asia and Latin America as a whole, and the lack of consideration of the specificities of cultures.

Table 1 - Culture Visualisation Summary

	Latin America	Europe Nordic	Europe Germanic
Performance Orientation	LOW	AVERAGE	HIGH
Assertiveness	AVERAGE	LOW	HIGH
Future Orientation	**LOW**	**HIGH**	**HIGH**
Humane Orientation	AVERAGE	AVERAGE	LOW
Institutional Collectivism	LOW	HIGH	LOW
In-Group Collectivism	**HIGH**	**LOW**	**LOW**
Gender Equalitarianism	AVERAGE	HIGH	LOW
Power Distance	HIGH	LOW	AVERAGE (HIGH)
Uncertainty Avoidance	**LOW**	**HIGH**	**HIGH**

Source: data collected from GLOBE Project (2020)

2.4. THE LATIN AMERICAN PARADOX

From the analysis of the different dimensions of culture and the different levels of happiness in Western Europe and Latin America, what conclusions can we draw?

We can highlight a main phenomenon: the relatively **high level of happiness** in Latin America and the **large grey area** as to the **reasons** for this happiness.

Diener et al. (2010) suggest that **economic development** is the primary determinant of happiness, there is a positive correlation between income and happiness, both between nations and within nations, although the correlation is weaker. However, while statistics reveal a strong correlation between economic development and the average level of happiness in the nation, Latin America surprises with its statistics. Indeed, despite poor economic development and persistent corruption, happiness rates in Latin America are higher than predicted (Exton et al., 2015). This paradox cannot be explained by **positive appraisal styles**, although people evaluate their lives positively overall, they do not overestimate their income or the performance of their economy. Latin America is therefore not subject to extreme response style or positive overestimation of every aspect of their lives (Diener et al., 2000; Exton et al. 2015). Diener et al. (2010) explain that the variation in the correlation between happiness and income, from one country to another, can be explained by the influence of both **context and culture**. Rojas (2018) goes further and suggests that this **paradox** may be due to the existence of **omitted variables** in the selection of **indicators** measuring happiness, which would explain the relatively high **country fixed-effects** in many Latin American countries (Argentina, 0.685; Chile, 0.884, Columbia, 0.730, Venezuela 1.178, Brazil, 1.309; Mexico, 1.399) (Exton et al., 2015).

"LATIN AMERICA IS MORE THAN A GEOGRAPHIC REGION: IT IS THE HOME TO A CULTURE WHICH PRESENTS PARTICULAR FEATURES THAT ARE RELEVANT IN GENERATING HIGH HAPPINESS." *(Rojas, 2018)*

The daily lives of Latin Americans are not reduced to the consequences of **poverty, corruption, inequality, and violence**. Also, their philosophy is that there is more to life than **income**. Latin American culture, as discussed above, is characterised by the centrality of **family** and interpersonal **relationships**, their warmth and closeness with friends and relatives. While most people grow up in a family, in some cultures, as soon as they reach adulthood, they are expected to leave the family nest. In Latin America, people tend to live longer with their parents and do not necessarily leave their families when they become adults. Thus, people prolong their companionship with those with whom they have grown up and with whom a close, disinterested, and lasting relationship already exists. It is also common to find elderly parents living in their adult and children's households. In Latin America, **one third** of the adult population lives with their parents, in Western Europe it is only **12%** and in Anglo-Saxon countries a mere **9%**. Hence, their characteristics may be summarized as: an affective regime that values and encourages the experience and **manifestation of emotions**, the existence of relatively **weak civic relationships**, a relative disinterest in **materialistic values**, and weak **political institutions** (Rojas, 2018).

The **values relevant** to the **measurement** of subjective well-being differ from one culture to another, hence the need to include **subjectivity** from one culture to another when seeking to make a **cross-cultural assessment** of well-being (Graham, 2008). Although there is little literature on this phenomenon, and when available, the results are rarely consistent. Yamamoto (2016) and Rojas (2018) presents a more comprehensive study with hopeful results in the World Happiness Report 2018. The main conclusion of his work is that the source of **extra happiness** in Latin America comes from the quality and warmth of **family ties**, as well as the greater importance given to social life in general, and especially to the family. Nevertheless, the strong role that learning or creativity plays in Latins' well-being goes well beyond the hedonic or daily dimensions of well-being and suggests a **deeper appreciation** of quality **of life** in the region. Although the level of happiness in Latin America is negatively affected **by socio-economic conditions** such as economic hardship, corruption, crime and violence, interpersonal relations specific to Latin America seem to largely compensate for these negative effects (Yamamoto, 2016; Rojas, 2020).

2.4.1. CONCLUSION

In conclusion, each country, each **culture** has its own **specificities**. It makes little sense to measure happiness without trying to understand the specificities of each and every country. Just as it is absurd

to want to adopt western measures worldwide, for the simple reason that Western countries are an example in both political and economic fields. Governments should not only focus on eradicating existing problems in their societies, in order to get closer to the western ideal. In parallel, the implementation of **policies** strengthening those **rich** already **existing** is indispensable in Latin American countries (Rojas, 2018).

2.5. MIGRATION AS A MEASURE OF THE CULTURAL IMPACT

Although the influence of culture on the level of happiness is undeniable, assessing this influence is fraught with difficulties. One of the most persistent problems when trying to measure the effect of culture on subjective well-being is that it is difficult to distinguish the influence of **country circumstances** (PESTEL) from the influence of **cultural circumstances** (such as language, history, values, attitudes, etc.) (Exton et al., 2015). The phenomenon of **migration** then provides us with a 'natural experiment' that allows us to isolate the psychological and cultural influences relating to the current country of residence (Senik, 2014). Through such investigations it would be possible to determine whether, for example, the high subjective well-being in Denmark is more associated with being Danish or with living in Denmark. While taking into account a range of individual-level determinants. The World Happiness Report (2018) also analysed this pattern and concluded that for the 20 happiest countries (of the report), the happiness of a locally born person was only 0.2 points (on a scale of 10) higher than that of a foreign-born immigrant living in the same country. The happiness of an immigrant depends **75%** on his country of **residence** and **25%** on his country of **origin**.

2.5.1. PROBLEMS WITH THE MIGRATION EXPERIMENT

However, this measure of country specific well-being determinants has **shortcomings**. Indeed, by analysing migrants only, the sample studied is not **random** and is only moderately representative of the population studied. Indeed, it has been shown that migrants aspire to an **economic improvement**, income is significantly more important for their life satisfaction (Bartram, 2011; Berkman, Calvo and Oliglati, 2013). Also, simply put, the happier people are, the less likely they are to want to leave their homes and emigrate abroad. Moreover, migrants are more inclined to migrate to a country for which they share **common values**, a country where it is easier for them to identify with the culture (Exton et al., 2015). Additionally, the more educated, the unemployed, those living in urban areas, those with networks abroad, and those reporting that corruption is present in government and in business are more likely to want to move (Graham and Nikolova, 2020). It is therefore the **socio-economic variables** that best predict who is most likely to migrate. Happiness/life satisfaction accounts for only 1% of the factors influencing the decision to migrate (Graham and Nikolova, 2020). Despite these shortcomings,

this study seems to demonstrate, in the case of Denmark, that 81% of subjective well-being is determined by the country of residence. Leaving 19% variance associated with the country fixed effect of the country of birth and therefore with culture. It is nevertheless important to contrast these results and not to draw general rules from them. Each country, each culture is different. Because let us remember that only one Latin American country is included in the 20 happiest countries in the report. As far as affect balance is concerned, the results are similar. The country of residence accounts for 83% of the country fixed effect compared to 17% for the country of birth (Exton et al., 2015).

2.5.2. MIGRATION FROM LATIN AMERICA

In Latin America and the Caribbean, where in 2020, **42,890,481 migrants** were reported (United Nations, 2021), we observe the phenomenon of "**frustrated achievers**", i.e., the migrant is on average **better off** but despite favourable income conditions, he is on average less happy as well. In Latin America, nearly 25% of the population, interviewed in Gallup World Poll, reports that given the opportunity, they would migrate to another country. The most popular destination is the **United States**, followed by **Spain** (Graham and Nikolova, 2020).

2.5.3. IMPACT OF MIGRATION ON HAPPINESS AMONG LATINOS

What is the impact of this **migration** on the level of **happiness**? Studies show that a Latin American migrant will have a **lower gain in happiness** compared to the gain of other migrants (Helliwell et al., 2020). As mentioned earlier, Cantril also observes that the lower level of happiness in poor countries is a consequence of a tendency to compare one's life to Western standards. Poor countries therefore describe themselves as underdeveloped in terms of possible life satisfaction and are actually happier than what they believe. This phenomenon could explain the **disillusionment** of the Latin migrants to Western countries and their relatively slight increase in the level of happiness.

After identifying Latino migrants and matched assets with a similar native-born individual from the same origin country who has no emigration intentions (his counter-factual), we find that emigrants have a higher life evaluation (0.3 higher on a scale of 0-10). However, when destination countries are divided into two groups: "**other Latin American countries**" and "**developed countries**" (US, Western Europe, Canada, etc.), we observe a different **pattern**. Indeed, migrants from Latin America who migrate to another Latin American country seem to increase their life satisfaction more than those going to a "developed country" (Graham and Nikolova, 2020). Hence the importance of the role of Latin culture in the generation of this premium happiness.

2.5.4. CONCLUSION

The **migration experiment** proves once again that Latin **culture** and its **specificities** are at the source of different patterns in the level of **happiness**. What if, instead of seeing this paradox as an anomaly, we sought to explain it, we **questioned the indicators** used to measure subjective well-being? Because the Latin American Paradox is not an anomaly, it is only a proof of the work that remains to be done in the measurement of happiness.

3. COVID-19

The **Covid-19 pandemic** has had a major impact on human lives, taking more than a million lives across the world with it. The response to the pandemic by governments was largely to implement **social distancing measures**, in order to limit the change and spread of the virus. These measures include lockdowns, closure of schools and non-essential workplaces, and restrictions on travel and gatherings. The primary aim of these measures was to minimise the mortality rate, but at what cost? The **collateral damages** of these measures include **economic collapse**, impact on **well-being** and mental health, depression, stress and more (Cheong, Kim and Koh, 2020; Gallup World Poll, 2021).

Ipsos, which analyses potential sources of happiness through surveys around the world, has noted some changes in trends in 2020. Indeed, the main sources of happiness identified in 2020 are: **health** and physical **well-being** (55%), **relationship** with partner (49%), **children** (49%), feeling life has a meaning (48%) and finally **living conditions** (45%). Compared to the results of the previous year's survey (pre-pandemic), relationships, health and safety sources of happiness have gained the most importance. On the other hand, **time** and **money** have lost in importance (Boyon, 2020).

In **Europe**, in 2020, the restrictions generally caused the level of life satisfaction to decline. The main drivers are anxiety, economic uncertainty and the limitation of close contact with friends and family. **Health** (-0.08) and **relationship** (-0.19) concerns were in fact more consequential for well-being than **income** (-0.07) and **unemployment** (-0.04). In addition, the feeling of **loneliness** "most or all the time" exploded from 6 to 17%. Countries with relatively high satisfaction scores experienced a greater drop than countries with lower-satisfaction prior crisis (Allas et al., 2020). Gallup World Poll (2021) found that 70% of interviewees reported having **smiled/laughed a lot** during the previous day. This is a **5%-point drop** from last year and the lowest score in 15 years. In addition, the **negative index** score also reached a **record high of 32**, as a result of the increase in emotions felt such as sadness, worry, anger and stress. See appendix **Error! Reference source not found. Error! Reference source not found.** for the methodology of these indexes.

Furthermore, countries with a previously low trust and relationship satisfaction are the countries with the highest loneliness rate in Europe. Demonstrating that **interpersonal relations** have cushioned the impact of the pandemic (Allas et al., 2020). However, as the **social support** seems to be of greater importance in LA, we may expect the social distancing measures to have **caused a greater drop in SWB** there.

Other findings indicate that, in the West, the countries most affected by the coronavirus and the countries with the highest mortality rates are also the least happy countries. Western countries reporting the lowest levels of life satisfaction include Italy, Spain, the US and the UK, which also have the highest COVID-19 death rates in this group. Also, **confidence in the national health system**, in terms of its ability to combat the pandemic, seems to be positively correlated with life satisfaction (Alford, 2020).

Within society, we also notice that **young people** are the least satisfied with life. Whereas before the pandemic, young and elderly people were the happiest (Imperial College's London's Institute of Global Health Innovation, 2020).

3.1.1. CONCLUSION

Despite a likely overall negative impact of the **pandemic** on the level of **happiness**, few conclusions can be drawn at the **global** level as to the intensity of this impact and the country specificities that could intensify or limit the impact of the coronavirus on happiness.

There is a need to determine how the pandemic and responses have affected the **well-being** of the population, looking beyond measures of **health** and **wealth** (Alford, 2020). As the pandemic affects all aspects of life, measuring the level of happiness in each nation by comparing it to the measures implemented would allow the development of **policies** that balance the quality of life and the health of the population (Helliwell, 2020). According to Allas et al. (2020), recovery plans should pay more attention to well-being. Europe's long-term prosperity depends on saving lives, sustaining livelihoods, and supporting quality of life. And although leaders are more acknowledging the importance of measuring a nation's success by metrics other than **GDP** per capita, embedding happiness as a standard criterion in decision making still has a long way to go (Allas et al., 2020).

4. CONCLUSION

What conclusions can be drawn from the existing literature? While the existing literature has been able to identify many **societal and individual factors** influencing the level of happiness in a globally uniform way, the literature on differences in **well-being across countries** is lacking. The literature on

Latin culture shows us that the impact of culture on subjective well-being is **undeniable**. It also allows us to highlight the shortcomings of taking into account country/culture specific characteristics in the measurement of happiness. In the case of Latin America, it would seem that the source of unexplained happiness comes from the quality of family ties and interpersonal relationships, yet rankings and questionnaires are struggling to incorporate it.

Also, the emergence of the **Covid-19** pandemic has highlighted the importance of **well-being**, including in the economic sphere. Hence the importance of incorporating well-being into **policies** to ensure their effectiveness. This could therefore motivate research and analysis of subjective well-being. Pushing for a questioning of the key dimensions of subjective well-being in the questionnaires, leaving the **GDP** per capita aside to give a more important place to **interpersonal relations**.

Coronavirus and health crisis measures, such as **social distancing**, could help to determine the extent to which **interpersonal relationships** play an important role in determining the level of **happiness** across countries and cultures, for example. This is what the rest of this research will be based on.

PART II: RESEARCH DESIGN

Now that we have discussed the qualitative approach to SWB, we can move on to the **quantitative analysis** of the **impact of covid-19 containment measures on SWB**, across LA and WE. In this section, we will present the **methodology** and data used to conduct our analysis.

1. SAMPLE DESCRIPTION

In this analysis, we will look at the countries previously identified as being part of **Latin America** and **Western Europe**. These are as follows:

- Western Europe: France, Switzerland, Belgium, the Netherlands, Luxembourg, Germany, Austria, Iceland, Norway, Denmark, Sweden and Finland.
- Latin America: Argentina, Bolivia, Chile, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay, and Venezuela.

Data collection during the coronavirus pandemic has been complicated and as a result, some countries were unable to submit data for 2020 on their subjective well-being. We are therefore forced to withdraw for Latin America: Costa Rica, Cuba, Guatemala, Honduras, Nicaragua, Panama, Paraguay and Peru. For Western Europe, Luxembourg is removed. Our final sample is therefore composed of **Austria, Belgium, Denmark, Finland, France, Germany, Iceland, Ireland, the Netherlands, Norway, Sweden** and **Switzerland**, for Western Europe. And **Argentina, Bolivia, Brazil, Chile, Colombia, Dominican Republic, Ecuador, El Salvador, Mexico, Uruguay** and **Venezuela**, for Latin America.

That is a total of **23 countries**. 12 in Western Europe and 11 in Latin America.

If the people most hit by covid-19 seem to have been more difficult to interview, the countries left out do not seem to be representative of the countries most hit by covid-19. Indeed, the **Stringency Index** (this index is described in 1.2.1 below), and the number of deaths related to the pandemic, of the countries included in our database are similar to those of the interviewed countries, if not lower.

Furthermore, the data collection the date of survey did not have systematic effects on the 2020 evaluations. Indeed, fewer than 2% of interviews taking place before March 15th (Helliwell et al., 2021).

For each of the 23 countries listed above, and for each of the dependent variables (SWB, LLE, BOA, PA and NA), we will have a base value which is the average change of the score, in %, between 2017 and

2019 as well as an endline value, which is the change of the score, in %, between 2019 and 2020 (the detail of this calculation can be found in Appendix 4.1 Dependent Variables - Methodology).

The countries will be distinguished based on their Region: **'Latin America'** or **'Western Europe',** which will allow us to use a region **dummy variable** in our regressions.

In order to run the regressions and thus determine the impact of containment measures on the various aspects of the subjective well-being in Europe and Latin America, we will need data collected on various indicators.

1.1. DEPENDENT VARIABLES

1.1.1. SUBJECTIVE WELL-BEING

The first essential indicator for our analysis is, naturally, our main dependent variable, the **Subjective Well-Being**. The data are collected by Gallup World Poll, every year. As explained in section 1.5 above, Subjective Well-Being is measured by surveys, among randomly selected respondents, it is the national average response to the question of **life ladder evaluation** and **balance of affects** (on a scale from 0 to 10).

On average, we have 1032 observations per country per year. That is, a total of 95,036 for the 23 countries over 4 years (from **2017 to 2020**).

In addition to the data on subjective well-being, other data sets will also be used. These vary in source and number of observations. For each of these datasets, we will only use the **average per country** as well as the **average change (%)** when relevant.

Beyond the overall regression of the **Subjective Well-Being** on the **Stringency Index**, we will take into account the different **components** of subjective well-being: the balance of affects and life ladder evaluation. Since these two components measure two different aspects of the SWB, it is expected that these components have been impacted differently by the Covid-19. Therefore, it is essential to run separate regressions for each component and then compare the results obtained for both of those.

1.2. VARIABLES OF INTEREST

1.2.1. STRINGENCY INDEX

In order to contrast the change of the SWB score between our baseline and endline, and in order to attribute this change to covid-19, we will use as a variable of interest the **Stringency Index**. This stringency index measures the strictness of the measures taken by the world' s governments (and not

their effectiveness nor appropriateness). The different policy responses are tracked since 1 January 2020, cover more than 180 countries and are coded into 9 indicators (OxCGRT, 2021; Our World in Data, 2021).

The Stringency Index ranges from 0 to 100, with 100 as the maximum stringency level. The index includes 9 different containment measures and an indicator of public health measures that have been put in place for the public and businesses (closure of schools, workplaces, public transport, cancellation of public events, limitation of gatherings, local and international travel, and presence of public information campaigns). A set that aggregates the intensity of Covid-19-related measures. The index score is given for each country on a daily basis.

In our regression, we will use the **average SI score in 2020 for each country**.

More details about the Stringency Index methodology can be found in the appendix 4.2 Independent Variable: Stringency Index - Methodology.

1.3. OTHER INDEPENDENT VARIABLES – CONTROL VARIABLES

Beyond our dependent and independent variables, we need to include various **control variables**, which will allow us to control for trends and variations in scores between different countries that are **not** directly **related to the Covid-19 pandemic.** These variables can be divided into different categories that we identified as having an impact on subjective well-being in the literature review of this research. In the Appendix **Error! Reference source not found. Error! Reference source not found.**, you'll find further explanation on these variables and what they measure.

2. RESEARCH QUESTION AND HYPOTHESES

The literature review prompted us to investigate various aspects of subjective well-being in Western Europe and Latin America. In this research, we decided to focus on the following **research question**:

DID THE CORONAVIRUS CONTAINMENT MEASURES (SI) IMPACT THE SUBJECTIVE WELL-BEING, AND ITS COMPONENTS, TO A DIFFERENT EXTENT IN LATIN AMERICA AND WESTERN EUROPE?

Our **null hypothesis** would therefore be that there is **no difference in the impact of the containment measures (SI) on the SWB** (and its components) **in LA and WE**.

If we manage to reject the null hypothesis, we could conclude that either one region has a greater capacity for **resilience**, or that the measure of subjective well-being is not adequate for one of the regions.

In order to answer our research question, we elaborate various hypotheses, which are based on the literature review.

Our **first hypothesis** is broad and considers only one dependent variable and independent variable. It is as follows:

H1: Overall, the Covid-19 outbreak has caused the subjective well-being to decrease.

Our null hypothesis therefore is that there hasn't been a disruption in the change of the SWB in 2020.

In order to reject, or not the null hypothesis, we will use the following scheme:

- As **baseline**: average change (%) of the score of **subjective well-being**, **life ladder evaluation** and **balance of affects** between **2017 and 2019.**
- As **endline**: change (%) of the score of **subjective well-being**, **life ladder evaluation** and **balance of affects** between **2019 and 2020.**

The average percentage change minimises the **extraordinary events** that occurred between 2017 and 2019. Moreover, we use the average change (%) for 2017-2019 since the overall SWB has followed a positive trend in the last decade. However, one limitation is that any variation in change between our baseline and endline is attributed to the occurrence of the coronavirus, as we do not control for potential other extraordinary events that occurred in 2020. Also, using the **first difference** (endline – baseline) allows to minimise the country **fixed effects**, as it removes everything that does not evolve over time.

In order to contrast the results obtained with the first hypothesis, we will have to **compare** the **change** in trend in the **subjective well-being** of each country **with** the **average intensity of the containment measures** of each government. This will allow us to conclude on the second hypothesis which is that:

H2: The stringency Index helps predict the negative evolution in SWB

H0: The Stringency Index does not influence the change in SWB.

We need to run a simple **regression** of the **SWB difference in evolution, BOA difference in evolution and LLE difference in change** on the **stringency index**. Here we will as well use a **plotted graph** to **graphically** identify the trend.

H2: Subjective Well-Being difference in change; Life ladder difference in change; Balance of Affects difference in Change = $\beta 1 + \beta 2\ Stringency\ \text{Index} + \varepsilon$

In order to improve the predictivity of our model, we will then **add** various **control variables** to our regression, thus obtaining:

H3: Controlling for other variables, the Stringency Index can be used to predict the negative evolution between baseline and endline of the SWB and its components

H0: controlling for other variables doesn't change the impact of the SI on SWB and its components

H3: Life ladder difference in change; Balance of Affects difference in change; SWB difference in change = $\beta 1$ + $\beta 2$ $Stringency$ Index + $\beta 3$ GDP change + $\beta 4$ Share of one-person households + $\beta 5$ Share of individuals using the internet + $\beta 6$ Risk of Impoverishment + $\beta 7$ share of population above 65 + $\beta 8$ Social Support Difference in Change + $\beta 9$ Index of Economic Support + ε

Elaborating on the above assumptions, and still taking the **stringency index** into consideration, we assume that:

H4: Subjective well-being in Latin America has been less resilient to the lockdown measures than in Western Europe.

H4: |Latin America's coefficient of regression of the stringency index on the difference in evolution of the SWB (and its components) | > |Western Europe's coefficient of regression of the stringency index on the difference in evolution of the SWB (and its components) |

We also assume that the impact of the GDP evolution in 2020 is smaller in Latin America than in Western Europe.

H5: the negative GDP evolution in 2020 has had a negative impact on the SWB, and this impact is smaller in Latin America than in Western Europe.

Then, we assume that:

H6: The evolution of social support in 2020 was a good predictor of the SWB evolution, and that its impact was greater in Latin America than in Western Europe.

H6: |Latin America's coefficient of regression of the social support evolution on the difference in evolution of the SWB | > |Western Europe's coefficient of regression |

Since life satisfaction is a longer-term evaluation and feeling than the balance of affects, we assume that the balance of affect is more sensitive to events and containment measures than the life ladder evalution is. Therefore, the following hypothesis is:

H7: Overall, the drop in the balance of affect is greater than the drop in overall subjective well-being.

H7a: | the % evolution of BOA between our baseline and endline | > | the % evolution of LLE |

We further detail this hypothesis by taking into account the stringency index.

H7b: |coefficient of the regression of stringency index on the difference in change of life ladder evaluation | < |coefficient of the regression of stringency index on the difference in change of balance of affect|

These regressions will be repeated with and without control variables for the different regions.

We will also check the global **assumptions**. Based on the literature review, we assume that the following **control variables** will impact the regression outcome in this way:

- The higher the share of **people over 65**, the greater the positive variation in SWB scores.
- The greater the share of **one-person households**, the greater the negative variation in change of SWB scores.
- The greater the share of **individuals using the internet**, the greater the positive variation in change of SWB scores

3. KEY DATA SOURCES

The sources of the data used are listed in the table Table 2 below. The two main sources of data are, for the dependent variables, the **World Happiness Report** (which includes data collected in collaboration with **Gallup World Poll**). And **OxCGRT** for the Stringency Index, the main independent variable.

Some **data** presented in the table were not used in the regressions but were used to gain more knowledge about the differences between LA and WE. And thus, choose which variables could be used as good control variables. A thorough description of the datasets is presented in the appendix 4 Research Design.

Table 2 - Data Description

DATASET	SOURCE	LATEST YEAR	MISSING DATA
DEPENDENT VARIABLES			
World Happiness Report Rank	World Happiness Report	2020	No missing data
Life Ladder Evaluation	World Happiness Report	2020	No missing data
Positive Affect	World Happiness Report	2020	No missing data
Negative Affect	World Happiness Report	2020	No missing data
INDEPENDENT VARIABLES			
Stringency Index	OxCGRT	2020	No missing data
OTHER VARIABLES			

- Demographic Variables			
Share of One-Person Households	United Nations and Eurostat	2019	Sweden and Denmark on Eurostat, the rest of the data comes from UN
Population ages 65 and above (% of total population)	World Bank and United Nations	2019	No missing data
Individuals Using the Internet (% of population)	World Bank International Telecommunication Union (ITU)	2019	No missing data however, most data for LA from 2017 while WE from 2019
- Social Support			
Social Support	World Happiness Report	2020	No missing data
- Economic Variables			
Real GDP growth (%)	IMF	2021	No missing data
Income support during Covid	OxCGRT	2020	No missing data
Risk of impoverishing expenditure for surgical care (% of people at risk)	The Program in Global Surgery and Social Change (PGSSC) at Harvard Medical School	2017	No missing data
- Health and Covid-19 Variables			
Share of population covered by health insurance	International Labour Organization and OECD	2007-2014	No missing data

Source: WHR (2021); OxCGRT (2021); IMF (2021); UN (2020); Eurostat (2020); Harvard Medical School (2018); ILO (2008), OECD (2015); ITU (2020); World Bank (2020)

4. DESIGN

In this **natural experiment**, we will mainly use a **multiple regression model**. This way, it will be possible to use **several explanatory variables** in our regression to predict the outcome of a response variable.

$y_i = \beta_0 + \beta_1 x_{i1} + \beta_2 x_{i2} + ... + \beta_p x_{ip} + \epsilon$

- $y1$ = Subjective Well-Being (difference in evolution (%) of the score between baseline and endline)
- $y2$ = Life Ladder Evaluation (difference in evolution (%) of the score between baseline and endline)
- $y3$ = Balance of Affects (difference in evolution (%) of the score between baseline and endline)
    - $y4$ = Positive Affect (difference in evolution (%) of the score between baseline and endline)
    - $y5$ = Negative Affect (difference in evolution (%) of the score between baseline and endline)

xi = explanatory variables

- x_{i1} = Stringency Index

Other explanatory variables:

- x_2 = Real GDP growth in 2020 (%)

- x_3 = Social support difference in evolution (%)
- x_4= Share of one-person households (%)
- x_5= Share of people using the internet (%)
- x_6 = Share of population ages 65 and above (%)
- x_7 = Risk of impoverishing expenditure for surgical care (%)
- x_9 = Economic Support Index

$\beta 0$ = y - intercept (constant term)

βp = slope coefficients for each explanatory variable

ϵ = the model's error term (also known as the residuals) the difference between the actual outcome and the predicted outcome

5. RISKS, ASSUMPTIONS AND LIMITATIONS

Our analysis will have to be based on different assumptions and take into account various limitations, notably related to certain risks.

First of all, our multiple regression model requires that:

- Dependent and independent variables should have a linear relationship
- The independent variables should not be too correlated with each other
- The y_i observations have been selected randomly from the population
- Residuals should be normally distributed with a mean of 0 and variance σ

In order to ensure that our analysis produces reliable results, we need to make various assumptions.

The first one is that the population is affected by the lockdown measures and that changes in the respondents' subjective well-being on the period studied are only due to the lockdown measures, no other major event susceptible to impact the subjective well-being occurred in 2020. Also, we assume that the **randomization** and the controlling of demographic characteristics of the sample have been carried out by Gallup. As, our model minimises country fixed effects and extraordinary events that occurred between 2017 and 2019, but not for those occurring in 2020. **Any variation in the change between our baseline and endline is attributed to the occurrence of the coronavirus.**

Among the limitations, we find first of all the **small sample size**. Indeed, we have only 23 countries divided into two subgroups of 11 and 12. This limited sample size will result in larger standard errors and therefore a lower significance level.

Moreover, our data do not distinguish by age, social class or other, the conclusions drawn are common to the whole country while the population subsets seem to have been affected differently by the containment measures depending on their age and social class. A future research would be to look for trends within various **subgroups** of the population, based on their **socio-economic characteristics**.

Moreover, the stringency measure is an **annual average**, whereas the subjective well-being was only **collected once during the year**, thus not taking into account the whole stringency change over 2020.

Finally, **internal validity** may be at stake because of the **self-reported aspect** of the data collected by Gallup and World Happiness Report.

PART III: RESULTS, IMPLICATION AND DISCUSSION

In order to reject or not our hypotheses and ultimately to be able to determine whether or not the **coronavirus containment measures (SI) have impacted the subjective well-being, and its components, to a different extent in Latin America and Western Europe**, we will use Stata software to run regressions according to the methodology presented in Part II. This section presents the results of the analysis.

1. OVERALL EVOLUTION IN SUBJECTIVE WELL-BEING

Our first hypothesis was the following:

H1: OVERALL, THE COVID-19 OUTBREAK HAS CAUSED THE SUBJECTIVE WELL-BEING TO DECREASE.

H0: the change of the SWB and its components remained steady in 2020

Independently of covid-19, Table 3 shows the average change in the SWB observed in 2020. While **between 2017 and 2019 the average evolution was 0.02%**, in **2020**, we observe a clear drop of **-5.85%** of this evolution, i.e. a **difference of 5.87% point** of the SWB evolution. This result is mainly **driven by LA**, with -10.48% point against only -1.65% point in WE.

We can therefore **confirm that there has been a decrease in the SWB score, but we cannot, at this stage, attribute these results to Covid-19**.

Table 3 - Average Change in Subjective Well-Being (%)

	Baseline Average Evolution in SWB (%) (between 2017 and 2019)	Endline Average Evolution in SWB (%) (between 2019 and 2020)	Average Evolution in SWB (% point) (between baseline and endline)
Both Regions	0.019854	-5.8508862	-5.8707402
Latin America	1.06612564	-9.4083644	-10.47449
Western Europe	-0.9392283	-2.5898646	-1.6506363

Source: based on Gallup World Poll's data (2021)

But what about the components of the SWB, namely, life ladder evaluation, positive affect and negative affect which both make up the balance of affects, a much more volatile component of the SWB?

1.1. LIFE LADDER EVALUATION

When we look at the trend in the **LLE**, presented in Table 4, we observe a **similar although less pronounced trend**, with an average drop for both regions of **-3.81% points**. Again, this negative trend is **driven by LA** which records a drop of -7.56% points while WE only has a drop of -0.3828% points in its LLE change.

Table 4 – Average Change in Life Ladder Evaluations (%)

	Baseline Average change in Life Ladder Evaluation (%) (between 2017 and 2019)	Endline Average change in Life Ladder Evaluation (%) (between 2019 and 2020)	Average change in Life Ladder Evaluation (%) (between baseline and endline)
Both Regions	0.41865217	-3.3957391	-3.8143913
Latin America	0.67327273	-6.8846364	-7.5579091
Western Europe	0.18525	-0.1975833	-0.3828333

Source: based on Gallup World Poll's data (2021)

1.2. BALANCE OF AFFECTS

When we look at the trend in the **BOA**, presented in Table 5. The **trend** is once again confirmed but this time it is even **more pronounced**. Indeed, the average drop for both regions is **-8.56% point**. Again, **driven by LA** which experiences a huge drop of -14.13% point while WE only shows a drop of -3.45% point in its BOA evolution.

Table 5 - Average Change in Balance of Affects (%)

	Baseline Average change in Balance of Affects (%) (between 2017 and 2019)	Endline Average change in Balance of Affects Evaluation (%) (between 2019 and 2020)	Average change in Balance of Affects (%) (between baseline and endline)
Both Regions	-0.1690161	-8.7253161	-8.5563
Latin America	1.99299091	-12.134864	-14.127855
Western Europe	-2.1508558	-5.5998975	-3.4490417

Source: based on Gallup World Poll's data (2021)

The results for the two BOA sub-components, PA and NA, are presented in the appendix 5.1 below.

2.2. CONCLUSION

Overall, we observe a more **pronounced decline in the BOA than in the LLE**, which is in line with our expectations. Indeed, the balance of affects is much more volatile than the life ladder and is more likely to be influenced by external events. The average evolution in **WE** of the different components of the SWB seems to have been **much more resilient** than in LA.

We can reject the null hypothesis that the evolution of the different SWB components remained stable in 2020.

However, these results are only average evolutions, intended to give us a first idea, they do not take into account the **intensity of the measures** related to the coronavirus, which could perhaps contribute to explain the results and trends obtained here. So far, we miss conclusive evidence that the observed drop in SWB evolution is really linked to covid-19. Therefore, we would like to contrast our results by taking into account the **Stringency Index**. The latter will allow us to determine the **impact of covid-19 measurements on SWB** to a greater extent if impact there was.

2. STRINGENCY INDEX AND SUBJECTIVE WELL-BEING

The second hypothesis is therefore:

H2: A HIGHER AVERAGE STRINGENCY INDEX HELPS PREDICT A GREATER DROP IN THE EVOLUTION OF SWB (AND ITS COMPONENTS)

To get a first idea of the **relationship between** our **SI** and the **evolution of** the **SWB components**, we look at the **correlation coefficients** per region. The results are presented in Table 6.

Table 6 – Correlation Coefficients with SI for SWB, LLE and BOA

	Difference in change in the SWB (% point)	Difference in change in Life Ladder Evaluation (% point)	Difference in change in Balance of Affects (% point)
Both Regions	-0.2949905603	-0,4311963371	-0,1798612082
Latin America	0.2713	-0.0037	0.3559
Western Europe	-0.0664	0.0478	-0.0792

Source: based on World Happiness Report (2021)

Overall, the **correlation** between Stringency Index and Difference in change in **Life Ladder Evaluation**, with a coefficient of **-0.43**, is extremely **large**. Implying a strong negative relation between SI and LLE. This result however doesn't hold when we look at the correlation per region.

The **SWB** and **BOA** respectively have a **moderately strong** correlation coefficient of **-0.295** and **-0.1799**.

Here too we observe **differing trends** between LA and WE. Indeed, LA has a negative correlation coefficient for the LLE while WE has a positive correlation coefficient. When we look at the BOA, it is the opposite, this time LA has a positive coefficient while WE has a negative one.

Thus, LA's BOA seems to be less negatively affected by the SI, while WE's LLE seems to be less negatively affected by the SI.

The correlation coefficients for PA and NA can be found in the Appendix **Error! Reference source not found.**. These show a positive correlation for PA. For the NA, inverse trends are again observed, LA has a positive coefficient while WE records a negative coefficient.

In conclusion, the **correlation coefficients do not provide evidence of a negative relationship** between SI and SWB and its components.

Now, in order to confirm or not hypothesis 2, we will **regress** the **SWB** and its various components on the **SI**, allowing us to further determine if there is a relationship between SWB and SI.

2.1. SWB

Our first **regression** is the **SWB evolution on the Stringency Index**. In Table 7 we present the output of the regressions by region, with and without control variables.

Table 7 - Regression output Subjective Well-Being (per region)

VARIABLES	BOTH REGIONS		LATIN AMERICA		WESTERN EUROPE	
	SUBJECTIVE WELL-BEING DIFFERENCE IN CHANGE					
	With	Without	With	Without	With	Without
STRINGENCY INDEX	**0.406**	**-.2461**	**.12884**	**.2911**	**0.811**	**-.06069**
	(0.276)	(.1739)	(.44566)	(.3441)	(0.347)	(.2882)
GDP change in 2020 (%)	0.263	-	-.36669	-	0.456	-
	(0.415)	-	(.9158)	-	(0.507)	-
Share of 1-person (%)	**0.00605**	-	**-.7822**	-	**2.142***	-
	(0.417)	-	(.9835)	-	(0.705)	-
Share of individuals using the internet (%)	**0.0896**	-	**.5880**	-	**-1.035****	-
	(0.179)	-	(.2339)	-	(0.252)	-
Share of population ages 65 and above (%)	1.246	-	.8189	-	-1.843	-

	(0.937)	-	(2.046)	-	(0.977)	-
Risk of impoverishing expenditure for surgical care (%)	0.574	-	1.1495	-	-	-
	(0.425)	-	(.6663)	-		-
Social Support difference in change (%)	0.452	-	.6404	-	0.599	-
	(0.425)	-	(.8250)	-	(0.344)	-
Economic Support Index	0.0785	-	.2557	-	0.156	-
	(0.121)	-	(.2513)	-	(0.114)	-
Constant	-56.32**	7.3601	-57.051	-28.2817	8.423	1.1999
	(23.45)	(9.5068)	(40.466)	(21.2263)	(33.64)	(13.6358)
Observations	22	23	11	11	11	12
R-squared	**0.618**	**0.0870**	**0.8695**	**0.0736**	**0.904**	**0.0044**

Standard errors in parentheses

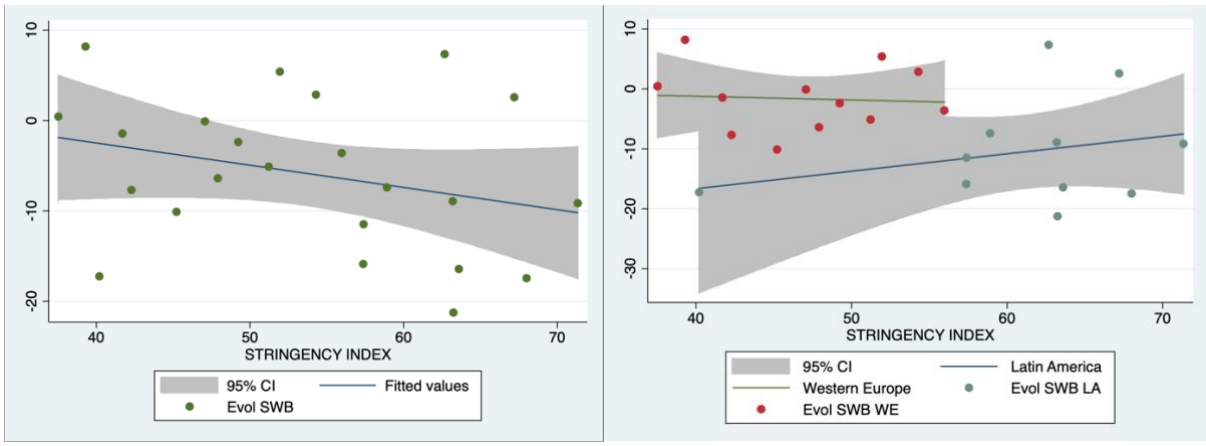
*** p<0.01, ** p<0.05, * p<0.1

Source: Stata Regression Output

2.1.1. SWB REGRESSION WITHOUT CONTROLS

A first regression was run without control variables, and the trends in Table 6 were observed.

Figure 5 - Scatterplots with fitlines, regression of SWB on SI (without controls)



Source: Stata regression output

While for **both regions**, the observed effect of increasing the SI by one point leads to a drop of **-.2461%** point in the **SWB evolution**, i.e. a relatively **high impact**, this trend is much less pronounced for the sub-regions.

Indeed, in **WE** the effect, although still negative, is smaller and insignificant **(-.06069**). In the case of **LA**, the relationship is even reversed and becomes positive **(.128837**). Thus, as far as **SWB** is concerned, Western Europe seems less **resilient** than **Latin America**.

In Figure 5, **different trends** are observed for the different regions. Once **negative** for both regions, once **positive** for LA and once relatively **stable** for WE. Since the range of SI levels is sufficient in LA and WE, these results suggest that there is a **bias of missing variables**. The observed difference in the evolution of SWB in 2020 could in fact be the result of other differences between the situation in LA and WE, in 2020, and the global regression fails to pick up these aspects.

Also, the **R-squared is very low** for this regression, which confirms that **other variables** need to be taken into account in order to determine this drop in SWB evolution observed earlier.

2.1.2. REGRESSION WITH CONTROLS

When we run the same regression but including control variables, the results are as follows (see Table 7 for the regression output).

BOTH REGIONS

The regression for **both regions** shows a **positive impact of the SI** (whereas it was negative before). Indeed, the evolution of the SWB seems to increase by 0.406 % points for a 1-point increase in the SI.

The control variables also have a positive impact on this relationship (non-significant results). Only the constant variable has a negative influence (-56.32) on the relationship and is significant at 90%.

LATIN AMERICA

Including these control variables helps to explain much of the variation in SWB, indeed the **R-squared** is now **0.8695**. In turn, the **explanatory power** of the **SI** on the **variation of the SWB drops** (**0.1288**) when we include the control variables. This supports the missing value bias.

Here, the variables that seem to pull the SWB down are the **GDP evolution in 2020** (-.3667) and the **share of 1-person HH** (-.7822).

WESTERN EUROPE

As for WE, the **SI's explanatory power** on the SWB **changes direction** when we include control variables. It has now a **positive coefficient (0.811)** as well.

Here, the variables that seem to have played a role in the SI/SWB relationship are the **share of 1-person HH**, with a strong positive impact of (**2.142**), this result is significant at 90%. The **share of people using the internet (-1.035)** and the **share of people ages 65 and above (-1.843)** also had a strong impact on the relationship but this time inversely. These results are significant at 90% for the share of one-person HH and 95% for the share of people using the internet.

2.1.3. CONCLUSION

Altogether, the **control variables** seem to **explain** the **evolution of SWB** better for the **regions** when studied **separately**. Indeed, the regression for both has a much lower R-squared. This may be due to the fact that some control **variables** seem to **affect the SI/SWB relationship differently** in LA and WE. These variables are:

- **Share of One-person HH**, with a strong positive impact in WE (2.142*) while in LA it is negative (-.7822);
- **Share of people using internet**, which is negative in WE (-1.035**) while positive for LA (.588);
- And, the **evolution of GDP in 2020** which impacts negatively on LA (-.3667) but positively on WE (0.456).

Here, we notice that the **SI** alone does **not** seem to be a **good predictor of SWB evolution**. Indeed, while there is a drop in the evolution of the SWB, the regression coefficients of the SI on the SWB are positive when other control variables are included.

As the SWB is composed of various components, we will now analyse them as well.

2.2. LIFE LADDER EVALUATION

Here we will discuss the results obtained with the regression of the **LLE** on the **SI**, in each region, with and without control variables. Table 8 is a summary of the outputs obtained.

Table 8 - Regression output Life Ladder Evaluation (per region)

VARIABLES	BOTH REGIONS		LATIN AMERICA		WESTERN EUROPE	
	LIFE LADDER DIFFERENCE IN EVOLUTION					
	With	Without	With	Without	With	Without
STRINGENCY INDEX	**0.0610**	**-.2609****	**-.07556**	**-.00297**	**0.399**	**.02088**
	(0.177)	(.1191)	(.50698)	(.2701)	(0.303)	(.1381)
GDP change in 2020 (%)	**-0.290**	-	**-.58262**	-	**-0.208**	-
	(0.265)	-	(1.0418)	-	(0.443)	-
Share of 1-person (%)	**-0.342**	-	**-.6615**	-	**0.909**	-
	(0.267)	-	(1.118)	-	(0.615)	-
Share of individuals using the internet (%)	**0.238***	-	**.3145**	-	**-0.235**	-
	(0.114)	-	(.2661)	-	(0.220)	-
Share of population ages 65 and above (%)	**1.254***	-	**1.169**	-	**-0.492**	-
	(0.600)	-	(2.328)	-	(0.854)	-

Risk of impoverishing expenditure for surgical care (%)	0.462	-	.5354	-	-	-
	(0.272)	-	(.7580)	-		-
Social Support difference in change (%)	0.468	**-**	**.7658**	**-**	0.536	**-**
	(0.272)	-	(.9385)	-	(0.301)	-
Economic Support Index	0.0214	-	.0043	-	0.131	-
	(0.0778)	-	(.2859)	-	(0.0992)	-
Constant	-38.85**	**10.21**	**-31.45**	-7.3760	-26.31	**-1.3636**
	(15.02)	(6.511)	(46.033)	(16.665)	(29.39)	(6.535)
Observations	22	23	11	11	11	12
R-squared	**0.737**	**0.1859**	**0.7042**	**0.0000**	**0.787**	**0.0023**

Standard errors in parentheses

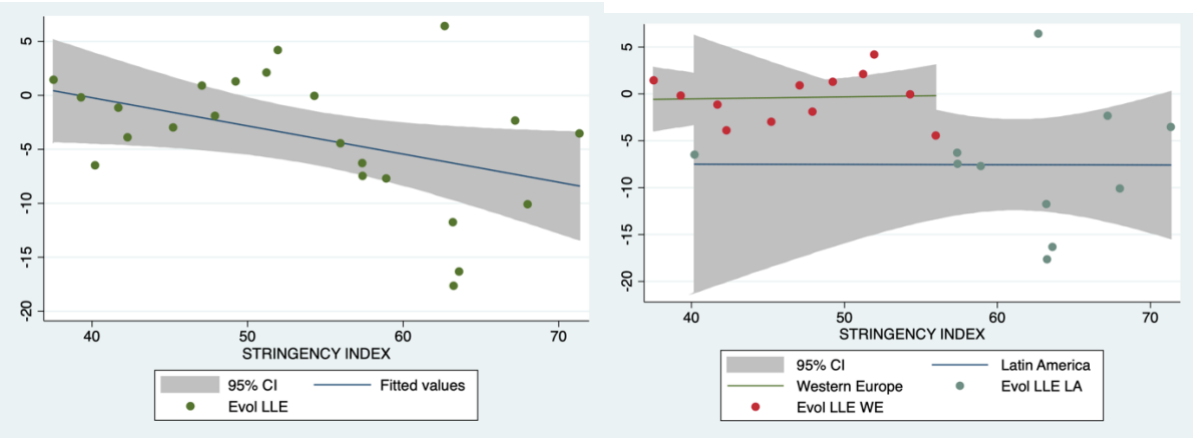
*** p<0.01, ** p<0.05, * p<0.1

Source: Stata Regression Output

2.2.1. REGRESSION WITHOUT CONTROLS

A first regression was run without control variables, the trends observed are presented in Figure 6.

Figure 6 - Scatterplots with fitlines, regression of LLE on SI (without controls)



Source: Stata regression output

Different trends are observed in Figure 6, while for **both regions**, the observed effect of increasing the SI by one-point leads to a drop of **-.2609% point in the LLE evolution** (significant at 95%), which is relatively high, this trend is nevertheless much less pronounced for the sub regions. Indeed, in **LA** the effect is still negative but smaller and insignificant **(-.00297**). As for **WE**, the relationship is even reversed and **becomes positive** (.**02088**). This time, it is Latin America that seems less resilient to SI in its SWB than Western Europe.

2.2.2. REGRESSION WITH CONTROLS

When running the same regression but including control variables, the results are as follows (and presented in Table 8).

BOTH REGIONS

The regression for both regions shows a **positive impact of the SI** (whereas it was negative before). Indeed, the evolution of the LLE seems to increase by **0.061 % points** for a 1-point increase in the SI.

The control variables with a **negative impact** on this relationship are:

- **GDP** evolution in 2020 (-0.290);
- The share of **one-person HH** (-0.342);
- And the constant.

We also see some other significant (90%) results in our control variables:

- The share of individuals using the internet (0.238);
- The share of population ages 65 and above (1.254).

LATIN AMERICA

For Latin America, including these **control variables helps explain much of the variation in LLE**, as the **R-squared** is now **0.7042** (whereas it was 0 before). Also, the **SI's explanatory power** on the LLE change **increases** (**-0.0756**) when we include control variables.

Here, the **variables** that seem to **pull** the LLE change **down** are:

- **GDP** evolution in 2020 (-0 58262) ;
- The share of **one-person HH** (-0.6615);
- And the constant.

On the other hand, the share of population ages 65 and above is the variable with the largest (and positive) impact (1.169).

WESTERN EUROPE

In the case of the WE, by including the control variables, the **SI's explanatory power on the LLE** evolution becomes even more positive (**0.399**).

Here, the **variables** that seem to have played a role in the SI/LLE relationship, with a **negative impact**, are:

- **GDP** evolution in 2020 (-.208)

- The share of **individuals using the internet** (-.235)
- The share of **population ages 65 and above** (-.492)
- And the constant

While the share **1-person HH** seems to have the most important (and **positive**) **impact** in this relationship (0.909).

2.2.3. CONCLUSION

The r-square is much higher when control variables are taken into account and is much more stable between regions when taken separately and together.

The **negative** trends of the SI's impact on SWB are confirmed for **LA** when including the control variables. In **WE** it is the opposite, the impact of the SI on the evolution of the LLE becomes even **more positive**. For the joint regression, we go **from a negative** and significant impact at 95% **to** a **positive impact**.

Opposite trends are again observed for the impact of:

- **Share of 1-person HH** (negative for LA and positive for WE);
- **Share of individuals using the internet** (positive for LA and negative for WE);
- **Share of population ages 65 and above** (positive for LA and negative for WE).

2.3. BALANCE OF AFFECTS

We predicted that the **BOA** would be **more affected by covid-19**, we did indeed find a larger drop in the evolution of this component, but can this be associated with the level of SI? The results of the regressions ran per region can be found hereunder, in Table 9.

Table 9 - Regression output Balance of Affects (per region)

VARIABLES	BOTH REGIONS		LATIN AMERICA		WESTERN EUROPE	
	BALANCE OF AFFECTS DIFFERENCE IN CHANGE					
	With	Without	With	Without	With	Without
STRINGENCY INDEX	**0.814**	**-.2334**	**.42112**	**.5999**	**1.372***	**-.13792**
	(0.466)	(.2786)	(.4869)	(.5251)	(0.450)	(.5491)
GDP change in 2020 (%)	0.969	-	.1844	-	1.452	-
	(0.701)	-	(1.0005)	-	(0.658)	-
Share of 1-person (%)	**0.494**	**-**	**-.5761**	**-**	**3.725****	**-**
	(0.705)	-	(1.074)	-	(0.915)	-

Share of individuals using the internet (%)	**-0.113**	-	**.3913**	-	**-2.020*** **	-
	(0.302)	-	(.2556)	-	(0.328)	-
Share of population ages 65 and above (%)	**1.129**	-	**.0686**	-	**-3.406***	-
	(1.583)	-	(2.236)	-	(1.269)	-
Risk of impoverishing expenditure for surgical care (%)	0.687	-	1.8629	-	-	-
	(0.718)	-	(.7280)	-		-
Social Support difference in change (%)	0.414	-	.3551	-	0.581	-
	(0.719)	-	(.9013)	-	(0.447)	-
Economic Support Index	0.173	-	.65844	-	0.181	-
	(0.205)	-	(.2745)	-	(0.147)	-
Constant	-75.98*	3.9975	-92.549	-50.842	45.16	3.029
	(39.63)	(15.23)	(44.210)	(32.393)	(43.68)	(25.98)
Observations	22	23	11	11	11	12
R-squared	**0.523**	**0.0063**	**0.9369**	**0.1267**	**0.952**	**0.0063**

Standard errors in parentheses

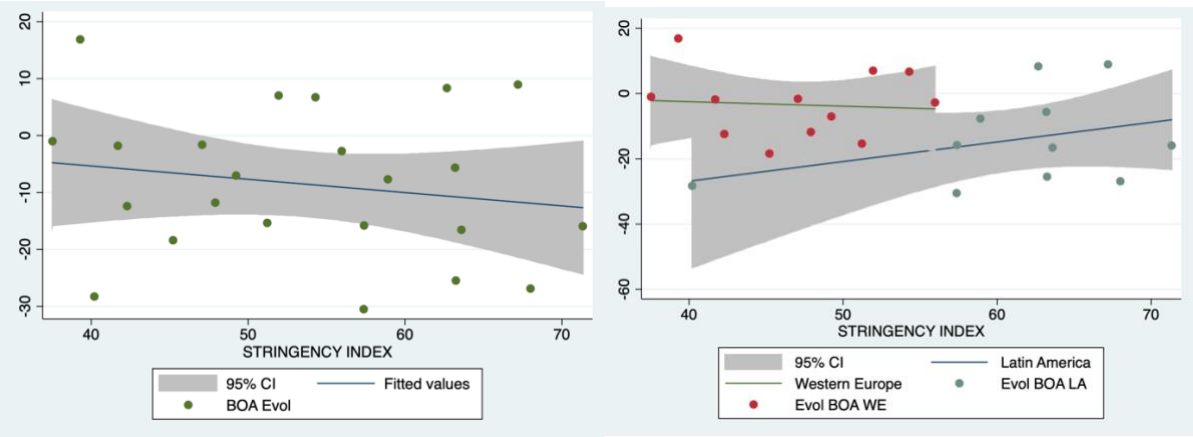
*** p<0.01, ** p<0.05, * p<0.1

Source: Stata Regression Output

2.3.1. REGRESSION WITHOUT CONTROLS

In Figure 7, the **relationship** between **SI** and **BOA** is presented graphically, by region.

Figure 7 - Scatterplots with fitlines, regression of BOA on SI (without controls)



Source: Stata Regression Output

Different trends are observed in Figure 7, while for both regions, the observed effect of increasing the SI by one-point leads to a **drop of -.2334% point in the BOA evolution**, which is a relatively **high impact**, this trend is much less pronounced for the sub regions. Indeed, in **WE** the effect is still negative

but **smaller** and insignificant **(-.1379**). For **LA**, the relationship is even reversed, with a **positive impact (.5999**). Here Latin America seems more resilient in its BOA than Western Europe, it was the opposite for the SWB. This is the third time in 3 regressions that each region adopts a different trend, without following a pattern.

2.3.2. REGRESSION WITH CONTROLS

When running the same regression but including **controls**, the **results** are **altered** (see Table 9).

BOTH REGIONS

The regression for both regions shows a **positive impact of the SI** (whereas it was negative before). Indeed, the evolution of the **BOA** seems to **increase by 0.814 % points** for a 1-point increase in the SI.

The control variables with a **negative impact** on this relationship are:

- Share of individuals using the **internet** (-0.113);
- And the constant (-75.98) (significant at 90%).

LATIN AMERICA

For LA, including those control variables helps explain much of the variation in BOA, as the **R-squared is now 0.9369** (whereas it was 0.1267 before). Also, the **SI's positive explanatory power** on the **BAO** evolution is **moderated** (**0.4211**) when we include control variables.

Here, the variables that seem to pull the BAO change down are:

- Share of **1-person HH** (-.5761)
- Constant (-92.55)

WESTERN EUROPE

With respect to **WE**, the SI's explanatory power on the BOA evolution becomes **extremely positive and significant at 90% (1.372)**.

Here, the **variables** that seem to have played a role in the SI/BOA relationship are, with a **negative** impact:

- Share of individuals using the **internet** (-2.020***)
- Share of population ages **65** and above (-3.406*)

While the share of **1-person HH** seems to have **the most important impact** (**positive** and significant at 95%) in this relationship (**3.725**). These values are much higher than those encountered previously.

2.3.3. CONCLUSION

Overall, we see that, when the **control variables** are taken into account, **SI has a relatively high positive impact on** the **BOA**, especially in WE.

The **R-square** is much **higher** when the control variables are taken into account, and when the analysis of the two **regions** is **separated**. Indeed, while for the two regions together, the r-squared is 0.523, for LA and WE it is 0.9369 and 0.952 respectively. The r-squared clearly demonstrate that **WE** and **LA behave differently towards** the **control variables**.

Opposite trends are observed for the following variables:

- Share of **1-person HH** (negative for LA and positive for WE);
- Share of population using the **internet** (positive for LA and negative for WE);
- Share of people **ages 65 and above** (positive for LA and negative for WE);
- Constant (negative for LA and positive for WE).

The results of the regressions for **PA** and **NA**, and their key takeaways can be found in the Table 25 Table 26 and Figure 13 and Figure 14 of the appendix.

Now that we have collected various results on the relationship between the SI and the SWB, we can address the hypotheses that were previously advanced.

Hypotheses 2 and **3** focused on the **explanatory power of the Stringency Index on the negative evolution of SWB**. The relation was expected to be negative, i.e. a higher SI would be associated with a higher drop in SWB. The summary of the results obtained in the previous regressions is presented in Table 10.

Table 10 – Summary Outcomes

	SWB			LLE			BOA		
SI	%-point Evol	With	Without	%-point Evol	With	Without	%-point Evol	With	Without
Both regions	-5.87	**0.406**	-0.2461	-3.81	**0.0610**	-0.2609**	-8.57	**0.814**	-0.2334
LA	-10.48	**0.12884**	0.2911	-7.58	**-0.07556**	-0.00297	-14.13	**0.42112**	0.5999
WE	-1.65	**0.811**	-0.06069	-0.38	**0.399**	0.02088	-3.5	**1.372***	-0.13792

While, when running regressions **without controls**, the **SI** seems to **predict** the **negative evolution** of the SWB and its components in the **same proportions** in LA and WE (between -0.233 and -0.261). When we look at this relationship for each region separately, we obtain as well positive as negative relationships. Also, when one includes **control variables**, the SI/SWB relationship is no longer confirmed. Taking into account the stringency index and other control variables produces only little

significant results. Moreover, even if the results obtained were to be significant, a higher stringency index wouldn't seem to translate into lower life ladder evaluation, lower balance of affects nor overall, lower SWB. We find that regression with control variables (results in bold in Table 10) tends to **predict a positive evolution of SWB** and its components. This suggests that **other factors** are more important in **explaining** the **SWB drop** than the SI.

Therefore, we **fail to reject the second and third hypothesis' null hypothesis**, namely, the **SI does not allow us to predict the drop in SWB** (and its components), with and without control variables.

In the **fourth hypothesis**, we assumed that **subjective well-being in Latin America had been less resilient to the lockdown measures than in Western Europe**.

Based on the results obtained, we can **partially confirm this hypothesis**. Indeed, if we consider only the SWB, and the SI, **without controls**, it is **LA** that seems to be the **most resilient**. This is also the case in the BOA, but not in the LLE. However, when we include **control variables**, we see in Table 10 , a more pronounced **positive influence of SI on SWB** and its components in **WE**.

Overall, the SWB in **WE seems more resilient but it cannot be concluded that this is in response to the covid-19 measures** since the SI appears to take a positive impact on SWB when controls are included.

Hypotheses 5 and 6 will be addressed in 3. GDP evolution and Subjective Well-Being and 4. Social Support 4 below.

What about our **seventh hypothesis** which **predicted a greater drop in the BOA than the LLE**?

Based on our average evolutions of the different components presented in Table 3, Table 4 and Table 5, we can conclude that the **drop** in the **balance of affects** is indeed **greater than** the **LLE** one, and thus **confirm hypothesis 7a**.

However, if **we consider the SI** in the **evolution** of the **BOA** and the **LLE**, the regression including the controls shows that the **BOA** was **positively impacted by** the **SI**, more than the LLE was (results to be found in Table 10 – Summary Outcomes). Therefore, since the introduction of SI and controls results in a **stronger positive relationship** between **BOA** and **SI** (relative to LLE), **we fail to confirm hypothesis 7b**.

3. GDP EVOLUTION AND SUBJECTIVE WELL-BEING

Since the control variables seem to bear the negative effect that there was on SWB, let's see if **hypotheses 5** and **6** can be corroborated. They took up the two aspects in which Latin and Western culture seem to differ the most, namely, the **predictive power of GDP and social support for SWB**.

Hypothesis 5 was that the negative GDP evolution in 2020 has had a negative impact on the SWB, and that this impact is smaller in Latin America than in Western Europe.

In the regressions that had been run previously, **GDP altered the LLE** and **SI relationship negatively**, especially in **Latin America,** while the impact was largely **positive** for **BOA**, especially in **WE**. It is therefore difficult to conclude anything about the influence of GDP evolution on the SI/SWB relationship. These results are reported below in Table 11.

Table 11 – Summary Outputs of GDP evolution in 2020 as a control variable, by region

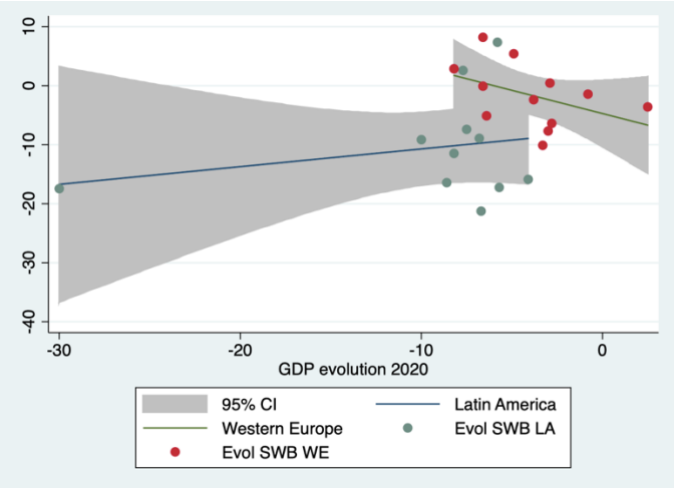
	SWB	LLE	BOA
SI	GDP evolution in 2020 (%)	GDP evolution in 2020 (%)	GDP evolution in 2020 (%)
Both regions	0.263	-0.290	0.969
LA	-0.36669	-0.58262	0.1844
WE	0.456	-0.208	1.452

Source: Stata output

We therefore decided to use the **evolution of GDP** no longer as a control variable but as the main **regressor** in order to further determine its impact on the SWB.

3.1. SUBJECTIVE WELL-BEING

Figure 8 - Scatterplots and Fitlines for GDP Evolution on SWB



Source: Stata output

Table 12 – Regression Output GDP and SWB (per region)

VARIABLES	BOTH REGIONS		LATIN AMERICA		WESTERN EUROPE	
	SWB DIFFERENCE IN EVOLUTION					
	With	Without	With	Without	With	Without
GDP real evolution in 2020 (%)	**-0.0782**	**.45493**	**-.530**	**.2998**	**-0.0572**	**-0.787**
	(0.358)	(.2956)	(.599)	(.4029)	(0.665)	(0.527)
Social Support change in 2020 (%)	0.597	-	.74581	-	0.319	-
	(0.431)	-	(.6167)	-	(0.470)	-
Share of 1-person (%)	**-0.261**	**-**	**-.9231**	**-**	**0.820**	**-**
	(0.391)	-	(.7120)	-	(0.612)	-
Share of individuals using the internet (%)	**0.124**	**-**	**.3772**	**-**	**-0.959***	**-**
	(0.184)	-	(.18778)	-	(0.364)	-
Share of population ages 65 and above (%)	**1.332**	-	**.7611**	**-**	**-0.782**	**-**
	(0.973)	-	(1.6977)	-	(1.260)	-
Risk of impoverishing expenditure for surgical care (%)	0.689	-	1.1792	-	-	-
	(0.435)	-	(.5487)	-	-	-
Economic Support Index	**0.0512**	**-**	**.2361**	**-**	**-0.0127**	-
	(0.125)		(.201)		(0.128)	
Constant	-32.91*	-2.945	-48.42	-7.718	70.75*	-4.718*
	(17.93)	(2.547)	(22.77)	(4.595)	(29.87)	(2.533)
Observations	22	23	11	11	11	12
R-squared	0.554	0.1013	0.8640	0.5255	0.730	0.1819

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Source: Stata output

The results (shown in Table 12) without control variables indicate that a **positive evolution** of **GDP** in 2020 would **influence negatively** the **SWB** in **WE** (-0.787) but **positively** in **LA** (0.2998). We see that the coefficient (0.4593) is positive also for both regions taken together.

Including **control variables**, we see that a **positive evolution** of **GDP** in 2020 seems to engender a **negative evolution** of the **SWB**. This negative evolution is most pronounced in LA (-.530).

Once again, we see that the **control variables influence** this relationship differently in LA and WE.

Here, on the one hand, we see that the **share of 1-person HH** has a positive impact for WE but a negative one for LA, on the other hand, the variables **share of population using the internet**, **population ages 65 and above** and the **economic support index** have a positive impact on this relationship for LA but a negative one for WE.

3.2. BALANCE OF AFFECTS

What about the **BOA**, which so far has been more affected in 2020 than the other components of the SWB? The results are presented in Table 13.

Table 13 - Regression Output GDP and BOA (per region)

VARIABLES	BOTH REGIONS		LATIN AMERICA		WESTERN EUROPE	
	BOA DIFFERENCE IN EVOLUTION					
	With	Without	With	Without	With	Without
GDP real evolution in 2020 (%)	**0.285**	**.6213**	**-.3505**	**.4873**	**0.584**	**-1.047**
	(0.622)	(.4660)	(.7527)	(.6319)	(1.040)	(1.062)
Social Support change in 2020 (%)	0.705	-	.6995	-	0.106	-
	(0.749)	-	(.7738)	-	(0.735)	-
Share of 1-person (%)	-0.0421	-	**-1.036**	-	**1.487**	-
	(0.680)	-	(.8934)	-	(0.958)	-
Share of individuals using the internet (%)	-0.0440	-	**.45098**	-	**-1.891****	-
	(0.321)	-	(.2356)	-	(0.570)	-
Share of population ages 65 and above (%)	1.301	-	**-.1201**	-	**-1.610**	-
	(1.692)	-	(2.1302)	-	(1.971)	-
Risk of impoverishing expenditure for surgical care (%)	0.917	-	**1.959***	-	-	-
	(0.756)	-	(.6884)	-		-
Economic Support Index	0.118	-	**.5942***	-	**-0.105**	-
	(0.217)		(.25303)		(0.200)	
Constant	-29.00	4.5608	**-64.349**	-9.648	150.7**	-7.531
	(31.18)	(4.015)	(28.577)	(7.2079)	(46.74)	(5.100)
Observations	22	23	11	11	11	12
R-squared	0.411	0.0780	0.9133	0.0620	0.802	0.089

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Source: Stata output

For the **BOA**, the results differ somewhat. There is an **overall positive impact** of **GDP evolution** on **BOA**. For the individual regions, the regression with control variables yields a **negative impact in LA** and a positive impact in WE.

3.3. CONCLUSION

Our regressions, without control variables, show that a positive evolution of GDP in 2020 influences negatively the SWB in WE, but positively in LA. However, if we include the controls, we see that a **positive evolution of GDP in 2020** seems to engender a **negative evolution of the SWB**. This negative evolution is **most pronounced in LA** (-0.530) and is only mild in WE (-0.0572). For the **BOA**, the regression with controls shows a **positive impact of a positive evolution of the GDP in WE but negative in LA**.

Here, we can only partially confirm **hypothesis 5**, which was that **the negative GDP evolution in 2020 has had a negative impact on the SWB, and that this impact is smaller in Latin America than in Western Europe**. Indeed, if for SWB we cannot draw much conclusion, we can nevertheless conclude that the **positive GDP evolution in 2020 has a positive impact on BOA in WE**, but not in LA. We can therefore confirm that the **negative GDP evolution in 2020 has had a greater negative impact in WE than in LA**. However, we **cannot confirm that the negative GDP evolution in 2020 has led to a decrease of the SWB and its components in LA and WE**.

In addition, other factors such as share of **one-person HH**, share of population using the **internet**, share of **population ages 65** and **above** seem to have had a greater impact on the **SWB** here.

4. SOCIAL SUPPORT

A hypothesis similar to that of the GDP had been drawn up, but this time for **social support**. The **hypothesis 6** was that **the negative evolution of social support would help predict the drop in the evolution of the SWB**. And **particularly** in **Latin America**.

The results previously obtained using the evolution of social support as a control variable are presented in Table 11.

Table 14 – Summary Outputs of GDP evolution in 2020 as a control variable, by region

	SWB	LLE	BOA
SI	Social Support difference in change (%)	Social Support difference in change (%)	Social Support difference in change (%)
Both regions	0.452	0.468	0.969

LA	0.6404	0.7658	0.536
WE	0.414	0.3551	0.581

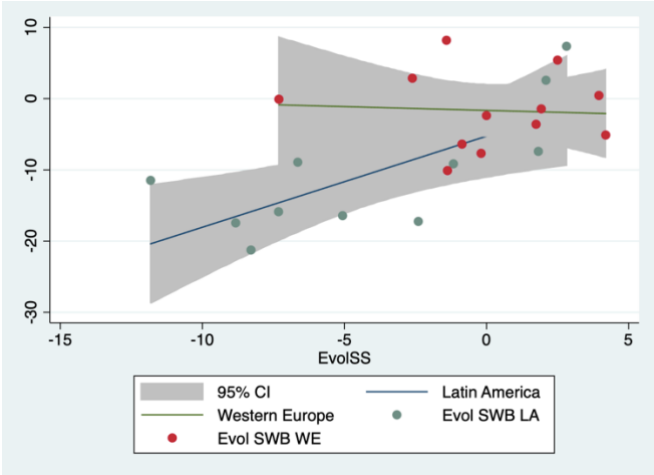
Source: Stata output

In the regressions we ran earlier, we see that **social support** has a **positive role** in all scenarios, both in LA and WE. For LA, surprisingly, the impact is greatest on the LLE. With the exception of the BOA, where the results are quite similar (0.536 and 0.581) but greater for WE, it is the **LA** that yields the **most importance** to this control variable in the SI/SWB relationship.

Below (Figure 9 and Table 15) are the results when the evolution of the **social support** is no longer used as a **control variable** but as the regressor.

4.1. SUBJECTIVE WELL-BEING

Figure 9 – Scatterplots and Fitlines for Social Support Evolution on SWB



Source: Stata output

Table 15 - Social Support Change in 2020 (%), SWB

VARIABLES	BOTH REGIONS		LATIN AMERICA		WESTERN EUROPE	
	SWB DIFFERENCE IN EVOLUTION					
	With	Without	With	Without	With	Without
Social Support change in 2020 (%)	**0.0410**	**1.1265*** **	**.7458**	**1.2786** **	**0.319**	**-.10638**
	(0.187)	(0.3163)	(.6167)	(.4050)	(0.470)	(.5362)
GDP real evolution in 2020 (%)	-0.183	-	-.5303	-	-0.0572	-
	(0.281)	-	(.5999)	-	(0.665)	-
Share of 1-person (%)	**-0.567***	**-**	**-.9231**	**-**	**0.820**	**-**
	(0.280)	-	(.7120)	-	(0.612)	-
Share of individuals using the internet (%)	**0.215***	**-**	**.3772**	**-**	**-0.959***	**-**

	(0.115)	-	(.18778)	-	(0.364)	-
Share of population ages 65 and above (%)	**1.534****	**-**	**.7611**	**-**	**-0.782**	**-**
	(0.607)	-	(1.6977)	-	(1.260)	-
Risk of impoverishing expenditure for surgical care (%)	0.420	-	1.1792	-	-	-
	(0.272)	-	(.5487)	-		-
Economic Support Index	-0.136	-	.2361	-	-0.0127	-
	(0.776)		(.201)		(0.128)	
Constant	0.816**	-3.7030**	-48.42	-5.2651*	70.75*	-1.645
		(1.538)	(22.77)	(2.540)	(29.87)	(1.631)
Observations	22	23	11	11	11	12
R-squared	0.592	0.3766	0.8640	0.5255	0.730	0.0039

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Source: Stata output

It is interesting to note how polarised the results are. **Social support** is an **incredible predictor of SWB** in 2020 in **LA** (1.279**), it is much **less so in WE** (-0.106). When the **control variables** are included, the results become **more consistent across regions**, but LA remains the most responsive to Social Support.

4.2. BALANCE OF AFFECTS

What happens when we look specifically at the **BOA**, which is assumed to be more volatile? The results of the regressions are presented in Table 16.

Table 16 - Social Support Change in 2020 (%), BOA

VARIABLES	BOTH REGIONS		LATIN AMERICA		WESTERN EUROPE	
	BOA DIFFERENCE IN EVOLUTION					
	With	Without	With	Without	With	Without
Social Support change in 2020 (%)	**0.705**	**1.450****	**.6995**	**1.844****	**0.106**	**-.4390**
	(0.749)	(0.5371)	(.773)	(.6898)	(0.735)	(1.015)
GDP real evolution in 2020 (%)	0.285	-	-.3505	-	0.584	-
	(0.622)	-	(.7527)	-	(1.040)	-
Share of 1-person (%)	**-0.0421**	**-**	**-1.036**	**-**	**1.487**	**-**
	(0.680)	-	(.8934)	-	(0.958)	-
Share of individuals using the internet (%)	**-0.0440**	**-**	**.45098**	**-**	**-1.891****	**-**

	(0.321)	-	(.2356)	-	(0.570)	-
Share of population ages 65 and above (%)	1.301	-	**-.1201**	-	**-1.610**	-
	(1.692)	-	(2.1302)	-	(1.971)	-
Risk of impoverishing expenditure for surgical care (%)	0.917	-	1.959*	-	-	-
	(0.756)	-	(.6884)	-		-
Economic Support Index	**0.118**	-	**.5942***	-	**-0.105**	-
	(0.217)		(.25303)		(0.200)	
Constant	-29.00	-5.765**	-64.349	-6.612	150.7**	-3.4286
	(31.18)	(2.611)	(28.577)	(4.326)	(46.74)	(3.0891)
Observations	22	23	11	11	11	12
R-squared	**0.411**	**0.2577**	**0.9133**	**0.4427**	**0.802**	**0.0184**

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Source: Stata output

This time, we see that **social support** still has a significant **explanatory power** for the evolution of the **BOA**, although the power is **moderated**. Indeed, for LA it is now **0.7** (against 0.746) and in WE of 0.106 (against 0.319).

4.3. CONCLUSION

Although not all our results are significant, we still clearly see that increasing the **social support** evolution by 1% point in 2020 **increases** the **SWB** as well as the **BOA**. Also, social support has a greater positive impact on SWB and BOA in LA than in WE. This confirms our expectations. Therefore, **we can confirm the hypothesis 6**, which was that **a drop in Social Support evolution could help predict a drop in SWB**. It goes even further by proving that **the explanatory power of social support is much greater in LA than in WE**.

5. CONCLUSIONS AND FURTHER RESEARCH

It is now time to take stock of our results and hypotheses in order to draw conclusions. Eventually, what are the main takeaways from this analysis?

We notice there has been a **clear drop in the evolution of the SWB** and its components in 2020. The drops recorded were **greater in the Balance of Affects than in the Life Ladder Evaluation**. Furthermore, the decrease was considerably **greater in Latin America than in Western Europe**.

Indeed, while WE remained relatively stable in the evolution of its SWB in 2020, recording a drop in evolution of 3.81% points, LA recorded an impressive drop of 8.56% points. We therefore tried to link the drop in SWB to the intensity of the covid-19 measures.

However, while the SI is substantially higher in LA, and although the previously obtained results are more contrasted when the stringency index is taken into account, the regressions including the control variables **do not allow to attribute the drop in the SWB to the SI level**. Indeed, whilst there is a drop in the evolution of the SWB, the regression coefficients of the SI on the SWB are positive when other control variables are included. As regards the Life Ladder Evaluation, the SI seems to have a negative influence in LA but a positive one in WE, when the control variables are taken into account. Concerning the BOA we see that, when the control variables are taken into account, SI has a relatively high positive impact on the BOA, especially in WE. **The Stringency Index is** therefore **not a good predictor** of the negative evolution of the SWB in 2020.

Nevertheless, it can be observed that the **region** seems to have **influenced** the **drop of the SWB**. Indeed, the fact that the R-Squared of the regressions (with controls) is globally high for the regions but not for the aggregate of the two regions proves that the region is a key factor in determining the impact of the stringency index and the control variables on the subjective well-being. Also, among the **control variables**, it can be seen that some of them have a **different impact** from one region to another. This is notably the case for the share of **1-person HH** (which has a negative impact in LA but a positive one in WE), the share of **people ages 65 and above** (which is positive in LA but negative in WE) and finally, the share of **people using the internet** (which has a positive impact in LA, but a negative one in WE).

We could see that the drop or resilience in the SWB is not directly caused by the SWB but by the control variables. And the direction of their influence is partly determined by the region studied. We therefore looked at the evolution of **GDP** and **Social Support** in 2020, which had been identified as having a different **explanatory power** for the SWB in LA and WE.

On the one hand, we could confirm that the **negative GDP evolution in 2020 has had a greater negative impact in WE** than in LA. However, we could not confirm that the negative GDP evolution in 2020 has led to a decrease of the SWB and its components in LA and WE.

On the other hand, we notice that the evolution of **social support** in 2020 is a **very good predictor** of the evolution of the **SWB**. Also, our hypothesis that social support would have a **greater influence in LA** than in WE is verified, as we observe a positive coefficient of the Social Support Evolution on SWB of 0.7 against only 0.1 in WE.

This research has answered a few questions regarding the role of culture in the evolution of SWB in 2020 but other questions have now been raised for further research.

In view of the **opposing influence of certain control variables**, it would be interesting to study them and their **relationship with the SWB, by region**. Investigating why the share of one-person household is positive in LA but not in WE, why the share of population ages 65 and above seems to pull the results up in LA but down in WE and similarly why the share of individuals using the internet positively impacts SWB in LA but not in WE.

It would be interesting to use a **continuous measure of SWB** to contrast those results with the SI which also offers a **daily measure**, this would allow us to study more precisely the SI/SWB relationship.

What concerns future **SWB data collection**, **social support** should be **represented** in more than just one question (as is currently the case) in the **questionnaire**. Overall, much more developed questionnaires are needed to track happiness on an ongoing basis.

Further research could be conducted on this area of interest, including **more countries** to allow for less variation amongst the results. This research could also be **repeated for other regions** of the world, seeking to highlight factors that are important to one culture but less so to another in their SWB.

One could also focus more on the **individualist/collectivist** country distinction as a moderating feature of the fall in SWB in 2020 as this is the dimension on which LA and WE diverge most in the Globe project's culture analysis.

PART IV: CONCLUSION

We found that although many **societal and individual factors** seemed to have a **universal** impact on SWB and its components, there was very little research on the **difference in importance** of the various factors from one **region** to another and the importance of **culture**.

By analysing different aspects of Latin and Western cultures we found that they differed particularly in the **importance of GDP** and **interpersonal relationships** in determining SWB.

Since **covid-19** measures have, among others, had a **direct impact** on the GDP and interpersonal relationships of individuals around the world. Through this research, we tried to see whether among the more **indirect effects** of containment measures, there was also a fall in **SWB**.

We therefore devoted the rest of the research to trying to answer the following question:

DID THE CORONAVIRUS CONTAINMENT MEASURES (SI) IMPACT THE SUBJECTIVE WELL-BEING, AND ITS COMPONENTS, TO A DIFFERENT EXTENT IN LATIN AMERICA AND WESTERN EUROPE?

We found that **Western Europe** experienced a much **less pronounced fall** in its SWB in 2020, compared to LA. We also see that **BOA** was the **component** which **most affected** in 2020.

However, the drop in the evolution of the SWB, and its components, observed in 2020 **cannot be attributed to the Stringency Index**. Indeed, we find that the SI has not directly impacted the SWB but that it has in fact impacted various variables (used as control variables here), which have driven the drop of the SWB in our regressions (especially **social support, GDP evolution, share of one-person HH, share of people using the internet and share of people ages 65 and above**). Also, we found that the control variables presented before adopted diverging trends across regions, proving that the **region is a key factor** in determining the impact of the stringency index and the control variables on the **subjective well-being.** Our research corroborates the **more than ordinary importance of social support** for SWB in **LA**.

Nevertheless, as only few of our results are significant, it is essential to conduct further research on these variables in order to determine their impact, and therefore their importance, on the determination of the SWB level.

Eventually, it makes very little sense to want to study something we already **struggle to define and measure**. The very first step to further research would be to come up with a **better** way of **measuring** the **SWB** across countries. Accounting more for factors such as social support that we see here, strongly impact the SWB. Also, while most research focuses almost exclusively on life ladder

evaluation, we see that the **balance of affects** accounts more for external events and the **emotional aspect**, which is nonetheless almost always found in the definition of happiness. The balance of affects is therefore just as important in determining the final level of the SWB.

Doing so, we would then maybe end up having more Latin countries in the top 20 of the World Happiness Report.

Another way of seeing **happiness** is that it **should not be studied**. If happiness is this desired, it may be because we don't know when we reach it, nor what it is made of. **Why measure** and, above all, why **rank** happiness by country, hence pushing for competition and **leading** by the same way to **negative emotions**?

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APPENDIX

1. SUBJECTIVE WELL-BEING

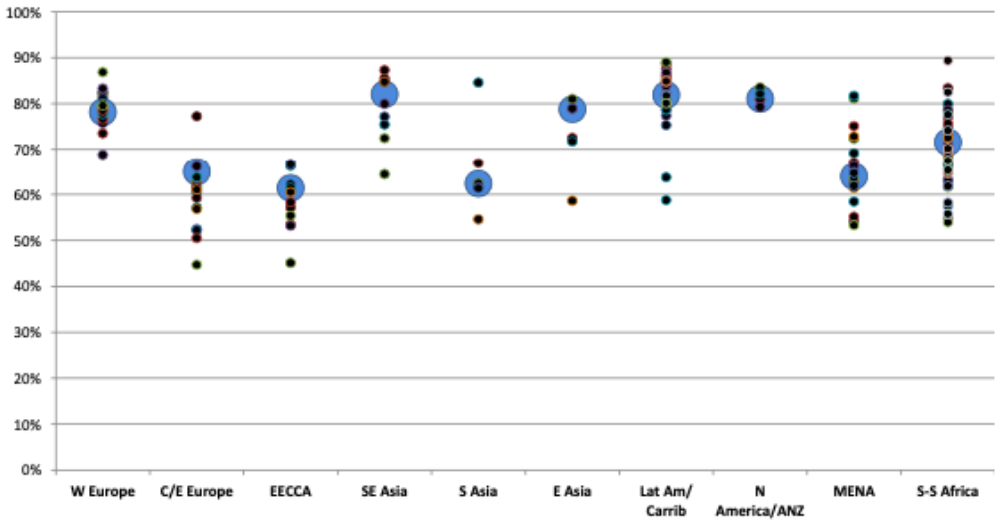
Table 17 – Zero-Order Correlations Between Types of Well-Being and Predictors

Predictor	Striving Scale	PF	NF
Log household income	.44	.17	−.09
Relative income (within-nations)	.21	.11	−.11
National log GDP per capita	.44	.10	−.03
Basic needs unmet	−.32	−.16	.19
Psychological needs met	.25	.45	−.28
Luxury conveniences	.39	.11	−.05
Satisfaction with standard of living	.40	.24	−.20
Work hours	.03	−.02	.03
Positive feelings	.23	—	
Negative feelings	−.19	−.38	—

Note. PF = positive feelings; NF = negative feelings; GDP = gross domestic product. For all correlations, $p < .001$.

Table 18 - Percentage Of Respondents Reporting Having Smiled Or Laughed A Lot Yesterday

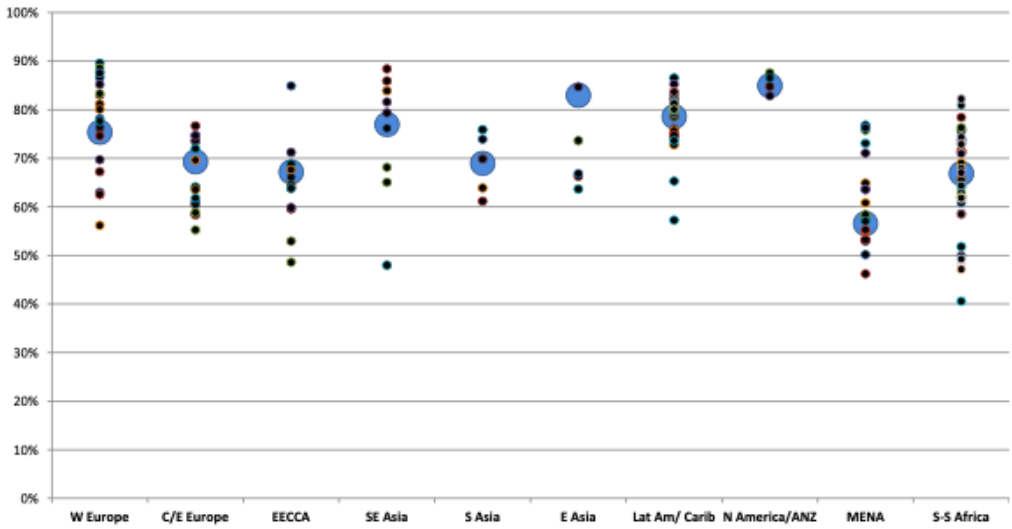
(2006-2013 pooled results)



Source: OECD (2020)

Table 19 - Percentage Of Respondents Who Reported Feeling Enjoyment A Lot Yesterday

(2006-2013 pooled results)

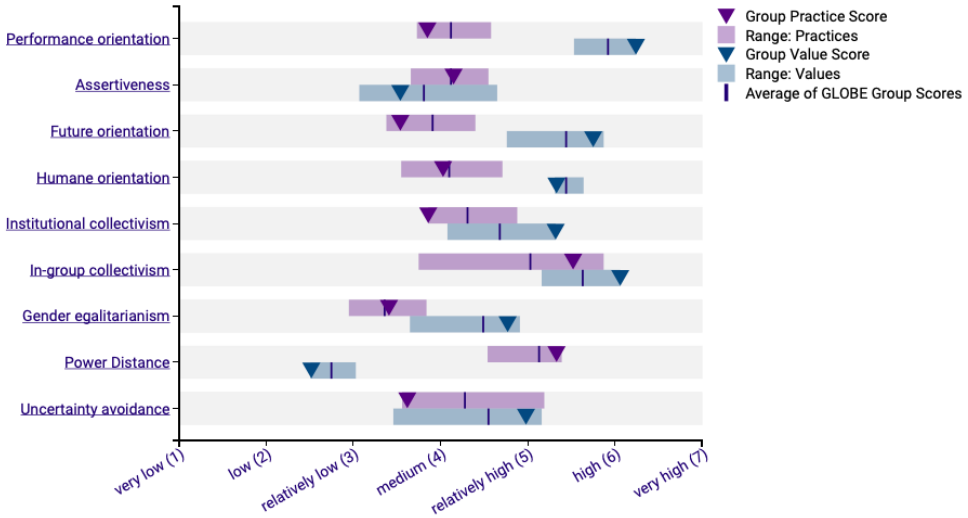


Source: OECD (2020)

2. CULTURE

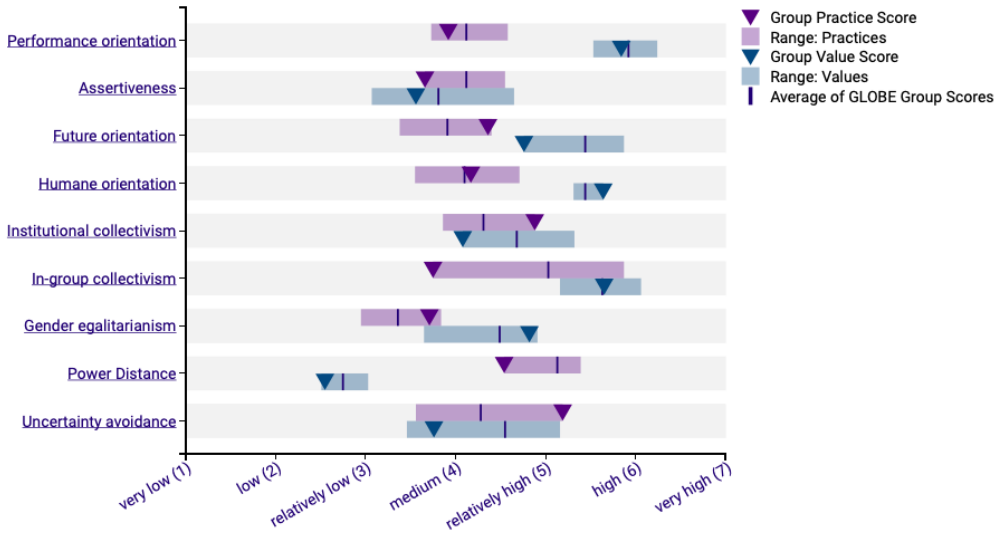
This section contains the summary figures of the various themes that are used to describe a culture, for the clusters of Latin America, Nordic Europe and Germanic Europe.

Figure 10 - Cultural Practices And Values In The Latin America Group



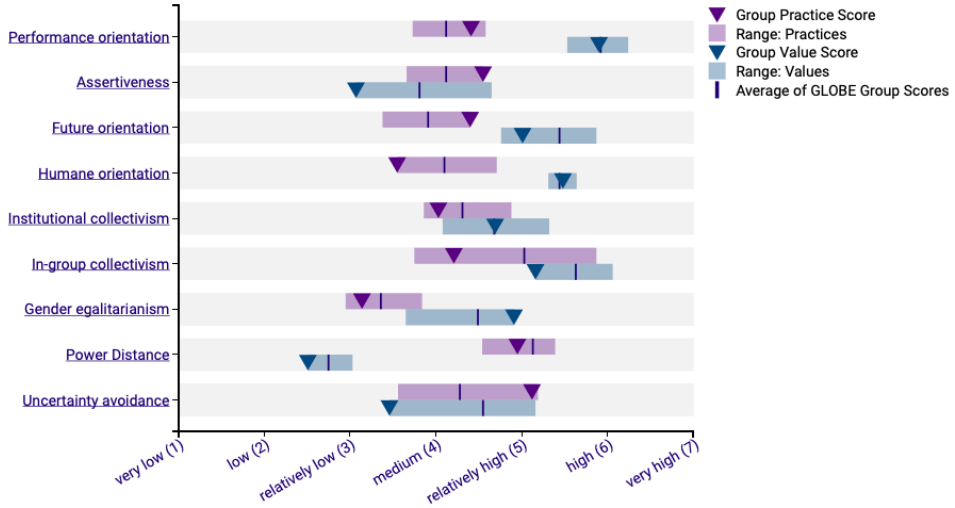
Source: GLOBE Project (2020)

Figure 11 - Cultural Practices And Values In The Nordic Europe Group



Source: GLOBE Project (2020)

Figure 12 - Cultural Practices And Values In The Germanic Europe Group



Source: GLOBE Project (2020)

3. COVID-19

Positive Experience Index (Gallup, 2021)

Its score is the mean of affirmative responses to the questions listed below, multiplied by 100. Country-level index scores range from zero to 100. A higher score indicates that positive emotions are more pervasive in a country. These scores strongly relate to people's perceptions about their living standards, personal freedoms and the presence of social networks.

- Did you feel well-rested yesterday?
- Were you treated with respect all day yesterday?

- Did you smile or laugh a lot yesterday?
- Did you learn or do something interesting yesterday?
- Did you experience the following feelings during a lot of the day yesterday? How about enjoyment?

Negative Experience Index (Gallup, 2021)

Its score is the mean of affirmative responses to the questions listed below, multiplied by 100. Country-level index scores range from zero to 100. A higher score indicates more pervasive negative emotions in a country. People's experiences with health problems and their ability to afford food are predictive of higher negative scores.

- Did you experience the following feelings during a lot of the day yesterday? How about physical pain?
- Did you experience the following feelings during a lot of the day yesterday? How about worry?
- Did you experience the following feelings during a lot of the day yesterday? How about sadness?
- Did you experience the following feelings during a lot of the day yesterday? How about stress?
- Did you experience the following feelings during a lot of the day yesterday? How about anger?

The results are based on nationally representative, probability-based samples among the adult population, ages 15 and older. The Positive Experience Index is based on surveys in 116 countries and areas in 2020 and early 2021 and the Negative Experience Index is based on surveys in 115 countries and areas in 2020 and early 2021.

Multiple administrations were collected in each country or area, with a sample size of 1,000 or more respondents per country or area. In most countries/areas, surveys were conducted over mobile and landline telephones; some in-person interviews were conducted in Republic of the Congo, India, Mali, Pakistan and Senegal.

4. RESEARCH DESIGN

This appendix lists the sampled countries, their regions and their stringency index.

Table 20 - Countries Sampled, their Region and their Stringency Index

	COUNTRY NAME	REGION	STRINGENCY INDEX
1	Argentina	Latin America	71.3351639
2	Austria	Western Europe	47.0652186
3	Belgium	Western Europe	51.2168306
4	Bolivia	Latin America	67.1998634
5	Brazil	Latin America	57.3691803
6	Chile	Latin America	62.6696995
7	Colombia	Latin America	63.1946995
8	Denmark	Western Europe	45.2144262
9	Dominican Republic	Latin America	63.2424044
10	Ecuador	Latin America	58.9111202
11	El Salvador	Latin America	63.5945355
12	Finland	Western Europe	37.5268579
13	France	Western Europe	54.2931148
14	Germany	Western Europe	51.9439071
15	Iceland	Western Europe	39.2958
16	Ireland	Western Europe	55.9675683
17	Mexico	Latin America	57.3926503
18	Netherlands	Western Europe	49.2328962
19	Norway	Western Europe	41.6956284
20	Sweden	Western Europe	47.9051639
21	Switzerland	Western Europe	42.2852186
22	Uruguay	Latin America	40.1968033
23	Venezuela	Latin America	68.0004918

Source: Stringency Index's data from OxCGRT

4.1. DEPENDENT VARIABLES - METHODOLOGY

For each of the components, i.e. Subjective Well-Being, Life Ladder Evaluation, Balance of affects, Positive Affects and Negative Affects, the score used is a difference in (% point):

Difference in Change (% point) **= Endline** (% change) **– Baseline** (% change)

- % change in X2 = (X2-X1)/X1 * 100 (X = year)
- Baseline: average change (%) in LLE score between 2017-2018 and 2018-2019
- Endline: change (%) in LLE score between 2019-2020

For the Balance of Affects, the annual score is a difference of the Positive Affect and the Negative Affect, i.e. :

Balance of Affects in X1 = Score Positive Affect in X1 - Score Negative Affect in X1

As for the Subjective Well-Being Score, it is a computed average of the scores in LLE and BOA:

SWB in X1 = (BOA in X1 + LLE in X1) / 2

4.2. INDEPENDENT VARIABLE: STRINGENCY INDEX - METHODOLOGY

Table 21 - Containment and Closure Policies (methodology)

ID	Name	Description	Measurement	Coding
C1	C1_School closing	Record closings of schools and universities	Ordinal scale	0 - no measures 1 - recommend closing or all schools open with alterations resulting in significant differences compared to non-Covid-19 operations 2 - require closing (only some levels or categories, eg just high school, or just public schools) 3 - require closing all levels Blank - no data
	C1_Flag		Binary flag for geographic scope	0 - targeted 1- general Blank - no data
C2	C2_Workplace closing	Record closings of workplaces	Ordinal scale	0 - no measures 1 - recommend closing (or recommend work from home) or all businesses open with alterations resulting in significant differences compared to non-Covid-19 operation 2 - require closing (or work from home) for some sectors or categories of workers

ID	Name	Description	Measurement	Coding
				3 - require closing (or work from home) for all-but-essential workplaces (eg grocery stores, doctors) Blank - no data
	C2_Flag		Binary flag for geographic scope	0 - targeted 1- general Blank - no data
C3	C3_Cancel public events	Record cancelling public events	Ordinal scale	0 - no measures 1 - recommend cancelling 2 - require cancelling Blank - no data
	C3_Flag		Binary flag for geographic scope	0 - targeted 1- general Blank - no data
C4	C4_Restrictions on gatherings	Record limits on gatherings	Ordinal scale	0 - no restrictions 1 - restrictions on very large gatherings (the limit is above 1000 people) 2 - restrictions on gatherings between 101-1000 people 3 - restrictions on gatherings between 11-100 people 4 - restrictions on gatherings of 10 people or less Blank - no data
	C4_Flag		Binary flag for geographic scope	0 - targeted 1- general Blank - no data
C5	C5_Close public transport	Record closing of public transport	Ordinal scale	0 - no measures 1 - recommend closing (or significantly reduce volume/route/means of transport available) 2 - require closing (or prohibit most citizens from using it) Blank - no data
	C5_Flag		Binary flag for geographic scope	0 - targeted 1- general Blank - no data
C6	C6_Stay at home requirements	Record orders to "shelter-in-place" and otherwise confine to the home	Ordinal scale	0 - no measures 1 - recommend not leaving house 2 - require not leaving house with exceptions for daily exercise, grocery shopping, and 'essential' trips 3 - require not leaving house with minimal exceptions (eg allowed to

ID	Name	Description	Measurement	Coding
				leave once a week, or only one person can leave at a time, etc) Blank - no data
	C6_Flag		Binary flag for geographic scope	0 - targeted 1- general Blank - no data
C7	C7_Restrictions on internal movement	Record restrictions on internal movement between cities/regions	Ordinal scale	0 - no measures 1 - recommend not to travel between regions/cities 2 - internal movement restrictions in place Blank - no data
	C7_Flag		Binary flag for geographic scope	0 - targeted 1- general Blank - no data
C8	C8_International travel controls	Record restrictions on international travel Note: this records policy for foreign travellers, not citizens	Ordinal scale	0 - no restrictions 1 - screening arrivals 2 - quarantine arrivals from some or all regions 3 - ban arrivals from some regions 4 - ban on all regions or total border closure Blank - no data

Source: OxCGRT

The binary flag is used when a policy is present in only a limited sector or geographic area. This way we can limit its scope. we use a binary flag variable to denote this limited scope. 7 of the indicators (C1-C7) have a flag for whether they are "targeted" to a specific geographical region (flag=0) or whether they are a "general" policy that is applied nationwide (flag=1).

The Stringency Index is a simple average of the individual component indicators. This is described in the equation below (k is the number of component indicators in the index) and I_j is the sub-index score for an individual indicator.

$$(1) \qquad index = \frac{1}{k}\sum_{j=1}^{k} I_j$$

4.3. OTHER INDEPENDENT VARIABLES

4.3.1. DEMOGRAPHIC VARIABLES

Share of One-Person Households

The percentage of one-person households as a ratio of total households (United Nations, 2019).

Median Age

Captures the fact that COVID-19 fatality rates are very high for the elderly and very low for the young. The median age captures both aspects of this differential fatality better than do measures of the share of the population above a certain age (Helliwell et al., 2021).

Population ages 65 and above (% of total population)

Population ages 65 and above as a percentage of the total population. Population is based on the de facto definition of population, which counts all residents regardless of legal status or citizenship. (United Nations, 2021)

Individuals Using the Internet (% of population)

All individuals who have used the Internet in the last 3 months are counted as Internet users. The Internet can be used via a computer, mobile phone, personal digital assistant, games machine, etc.

Island

Access to the territory must be by air or sea. The application of measures to monitor and block virus movements were simplified there (Helliwell et al., 2021).

4.3.2. ECONOMIC VARIABLES

GDP per Capita

GDP per capita is gross domestic product divided by midyear population. GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources. Data are in current U.S. dollars. World Bank, 2021)

Real GDP growth (%)

Annual percentage growth rate of GDP at market prices based on constant local currency. Aggregates are based on constant 2010 U.S. dollars. GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the

products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources. (World Economic Outlook, 2021) (World Bank, 2021)

GINI coefficient of income

It measures a country's degree of income inequality, on a scale from 0 to 100, with 0 representing complete equality (Helliwell et al., 2021).

Income support during Covid

Income support captures if the government is covering the salaries or providing direct cash payments, universal basic income, or similar, of people who lose their jobs or cannot work.

0 - no income support 1 - government is replacing less than 50% of lost salary (or if a flat sum, it is less than 50% median salary) 2 - government is replacing 50% or more of lost salary (or if a flat sum, it is greater than 50% median salary) (Our World in Data, 2021)

Number of people spending more than 25% of household consumption or income on out-of-pocket health care expenditure

Proportion of population spending more than 25% of household consumption or income on out-of-pocket health care expenditure.

Risk of impoverishing expenditure for surgical care (% of people at risk)

The proportion of population at risk of impoverishing expenditure when surgical care is required. Impoverishing expenditure is defined as direct out of pocket payments for surgical and anaesthesia care which drive people below a poverty threshold (using a threshold of $1.90 PPP/day).

4.3.3. HEALTH AND COVID-19 VARIABLES

Share of population covered by health insurance

Estimate of health insurance coverage as a percentage of total population. Coverage includes affiliated members of health insurance or estimation of the population having free access to health care services provided by the State.

COVID-19 deaths per 100,000 population in 2020

national average COVID-19 deaths per 100,000 population in 2020

Excess deaths in 2020 per 100,000 population, relative to 2017-2019 average

Index of exposure to COVID-19 infections in other countries as of March 31

Measures how close a country was, in the early stages of the pandemic (March 31), to infections in other countries (Helliwell et al., 2021).

Trust in Health Sector

The survey covers topics such as whether people trust science, scientists, and information about health, the levels of understanding and interest in science and health, the benefits of science, the compatibility of religion and science, and attitudes to vaccines. (Gallup, 2019)

4.3.4. GOVERNEMENT VARIABLES

Institutional Trust

The first principal component of the following five measures: confidence in the national government, confidence in the judicial system and courts, confidence in the honesty of elections, confidence in the local police force, and perceived corruption in business. This principal component is then used to create a binary measure of high institutional trust using the 75th percentile in the global distribution as the cutoff point. Helliwell et al. (2021)

Trust in Government

Average level between 2017-2019. Confidence in public institu- tions supports the choice and successful application of a virus-suppression strategy because those living in societies with high institutional trust levels are more likely to accept the necessity of fast and sometimes painful policy measures (Helliwell et al., 2021).

Female Head of Government

Female heads of government have tended to favour making policy with overall well-being as the objective, and this makes suppressing community transmission an even more obvious choice for them (Helliwell et al., 2021).

4.3.5. WHR EXPLANATORY VARIABLES

Positive Affect

Average of previous-day affect measures for happiness, laughter and enjoyment.

Negative Affect

Average of previous-day affect measures for worry, sadness and anger in all years

Social Support

National average of the binary responses to GWP question, “if you were in trouble, do you have relatives or friends you can count on to help you whenever you need them, or not?”

5. RESULTS

5.1. AVERAGE CHANGES IN PA AND NA, IN 2020

Table 22 - Average Change in Positive Affect (%)

	Baseline Average change in Positive Affect (%) (between 2017 and 2019)	Endline Average change in Positive Affect (%) (between 2019 and 2020)	Average change in Positive Affect (%) (between baseline and endline)
Both Regions	0.9473913	-3.5245652	-4.4719565
Latin America	1.41809091	-4.3012727	-5.7193636
Western Europe	0.51591667	-2.8125833	-3.3285

Source: based on Gallup World Poll's data (2021)

Table 23 – Average Change in Negative Affect (%)

	Baseline Average change in Negative Affect (%) (between 2017 and 2019)	Endline Average change in Negative Affect (%) (between 2019 and 2020)	Average change in Negative Affect (%) (between baseline and endline)
Both Regions	3.18595652	8.2253913	5.03943478
Latin America	1.981	10.799	8.818
Western Europe	4.2905	5.86625	1.57575

Source: based on Gallup World Poll's data (2021)

In LA, the change in PA decreased by -5.72% point, while NA increased by 8.82.

In WE, PA evolution decreased by -3.3285 and the NA evolution increased by 1.5758% point.

Table 24 – Correlation Coefficients with SI for PA and NA

	Difference in change in Positive Affect (% point)	Difference in change in Negative Affect (% point)
Both Regions	0,01065175546	-0,0411628193
Latin America	0.3559	0.4187
Western Europe	0.1190	-0.1660

Source: based on World Happiness Report (2021)

5.2. POSITIVE AFFECT

Below are the results on the impact of the SI on PA, by region.

Table 25 – Regression output Regression output Positive Affect (per region)

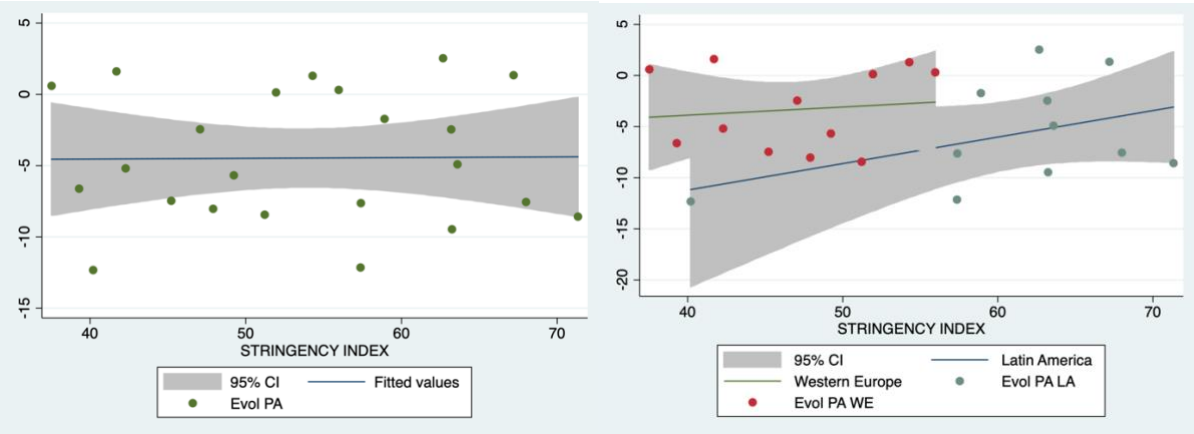
VARIABLES	BOTH REGIONS		LATIN AMERICA		WESTERN EUROPE	
	POSITIVE AFFECT DIFFERENCE IN CHANGE					
	With	Without	With	Without	With	Without
STRINGENCY INDEX	**0.233**	**.004869**	**.02401**	**.25916**	**0.481**	**.0796**
	(0.205)	(.0997)	(0.1753)	(.1873)	(0.225)	(.2102)
GDP change in 2020 (%)	0.364	-	-.34267	-	0.762	-
	(0.308)	-	(.3602)	-	(0.329)	-
Share of 1-person (%)	**0.359**	**-**	**-.5257**	**-**	**1.983****	**-**
	(0.310)	-	(.3868)	-	(0.457)	-
Share of individuals using the internet (%)	**-0.0867**	**-**	**.1324**	**-**	**-1.023*****	**-**
	(0.133)	-	(.0920)	-	(0.164)	-
Share of population ages 65 and above (%)	**-0.242**	**-**	**.02943**	**-**	**-2.480****	**-**
	(0.696)	-	(.8051)	-	(0.634)	-
Risk of impoverishing expenditure for surgical care (%)	0.0616	-	.67808	-	-	-
	(0.316)	-	(.26212)	-		-
Social Support difference in change (%)	0.304	-	.3111	-	0.455	-
	(0.316)	-	(.3245)	-	(0.223)	-
Economic Support Index	0.0664	-	.1974	-	0.127	-
	(0.0903)	-	(.0988)	-	(0.0737)	-
Constant	-15.61	-4.733	-22.61	-21.578*	42.66	-7.0708
	(17.43)	(5.453)	(15.91)	(11.56)	(21.83)	(9.945)
Observations	22	23	11	11	11	12
R-squared	**0.384**	**0.0001**	**0.9394**	**0.1753**	**0.946**	**0.0142**

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Source: Stata regression output

Figure 13 – Scatterplot and fitline for PA on Si (per Region)



Source: Stata regression output

Whether with or without control variables, both regions report a positive impact of the SI on the evolution of the PA. In **WE**, the coefficient is **0.481**, in **LA 0.024** (with controls).

The **WE** regression gives some significant results:

- Share **1-person HH** has a strong positive and significant impact (**1.983**);**
- Share of people using the **internet** has a strong negative and significant impact **(-1.023***);**
- Share of people ages 65 and above shows a strong negative impact (**-2.480**).**

The remaining variables have a positive impact on the relationship between SI and PA.

For **LA**, we see a negative influence of:

- **GDP** evolution in 2020 **(-.34267**);
- Share of **1-person HH (-.5257**);
- Constant

We notice an opposite trend in the control variables for:

- **GDP** evolution in 2020
- Share of **1-person HH**
- Share of people ages **65** and above
- Share of people using the **internet**

5.3. NEGATIVE AFFECT

Below are the results on the impact of the SI on NA, by region.

Table 26 – Regression output Negative Affect (per region)

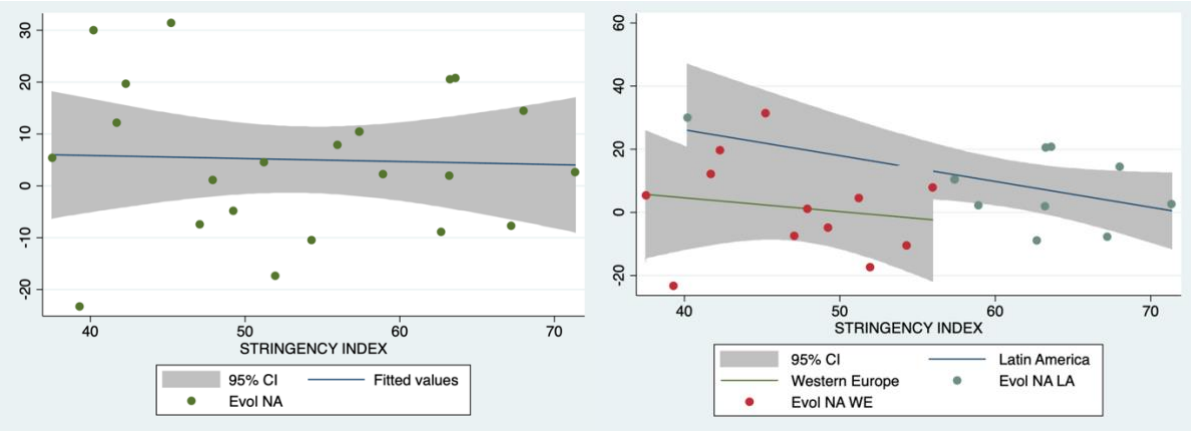
VARIABLES	BOTH REGIONS		LATIN AMERICA		WESTERN EUROPE	
	NEGATIVE AFFECT DIFFERENCE IN CHANGE					
	With	Without	With	Without	With	Without
STRINGENCY INDEX	**-1.133****	**-.05806**	**-.4397**	**-.8173***	**-1.912**	**-.4348**
	(0.517)	(0.3075)	(.4732)	(0 .411)	(1.839)	(.8168)
GDP change in 2020 (%)	-0.0924	-	.7120	-	-0.476	-
	(0.777)	-	(.972)	-	(2.688)	-
Share of 1-person (%)	0.487	-	1.347	-	-2.688	-
	(0.782)	-	(1.044)	-	(3.738)	-
Share of individuals using the internet (%)	-0.110	-	-.6110	-	1.846	-
	(0.335)	-	(.2484)	-	(1.338)	-
Share of population ages 65 and above (%)	**-3.520***	-	**-.7085**	-	**0.582**	-
	(1.755)	-	(2.173)	-	(5.185)	-
Risk of impoverishing expenditure for surgical care (%)	-0.985	-	-1.634	-	-	-
	(0.796)	-	(.7076)	-		-
Social Support difference in change (%)	-0.0612	-	-.7422	-	-0.351	-
	(0.797)	-	(.8760)	-	(1.826)	-
Economic Support Index	0.0653	-	-.2173	-	-0.0901	-
	(0.227)	-	(.2668)	-	(0.603)	-
Constant	116.2**	8.161	87.473	58.831**	12.87	22.00
	(43.93)	(16.81)	(42.971)	(25.375)	(178.5)	(38.64)
Observations	22	23	11	11	11	12
R-squared	0.498	0.0017	0.8418	0.3049	0.706	0.0276

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Source: Stata regression output

Figure 14 – Scatterplot and fitline for NA on Si (per Region)



Source: Stata regression output

Here the results must be **interpreted in the opposite way**, since we are talking about negative affect, a negative result would therefore mean that there was a decrease in the positive evolution of the NA. This would mean that negative emotions were felt less often.

Surprisingly, taking into account the control variables or not leads to the same result for all regions. We see that the **SI helped decrease the positive evolution of the NA**.

For **both regions** we have an impressive coefficient (significant at 95%) of **-1.133**, for **LA -0.4397** and for **WE -1.912**.

For both regions together, the share of population ages **65** and above has had a **strong negative** and **significant** impact on the relationship **(-3. 520*)**

There was a positive impact (so negative) of the following variables:

- Share 1-person HH (0.487);
- Economic support (0.0653);
- High constant (116.2**)

For **LA**, there was a positive impact (hence negative) of:

- GDP evolution in 2020 (.7120);
- Share of 1-person HH (1.347);
- Constant.

And finally, for **WE**, there was a positive impact (hence negative) of:

- Share of population using the internet (1.84);
- Share of population ages 65 and above (0.582);
- Constant.

We notice LA and WE behaved differently on:

- GDP evolution in 2020 (negative for WE, positive for LA);
- Share of population using the internet (positive for WE, negative for LA);
- Share of population ages 65 and above (positive for WE, negative for LA);
- Share of 1-person HH (negative for WE, positive for LA).