



Article

Basic Psychological Needs, Good Societal Development and Satisfaction with Life: The Mediating Role of the Environment

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Abstract: Seminal work on laypeople's perspectives on societal development is the foundation of our renovated interest in good development and its relationship with well-being. The present study aims to analyze the relationship between individual basic psychological needs satisfaction, people's visions of good societal development in the framework of the Sustainable Development Goals, and well-being in terms of Satisfaction with Life. To reach this aim, we administered an online survey to a general sample (N = 206, F = 69.4% M = 28.6%, mean age of 33.39 years, and sd = 12.33) with different measures: (a) 3 Basic Psychological Needs (i.e., Autonomy, Relatedness, and Competence) Satisfaction Scale; (b) an ad hoc built Attitude towards the 17 UN Sustainable Development Goals (SDGs) Scale; (c) Satisfaction with Life Scale. We conducted an Exploratory Factor Analysis (EFA) on the scale about attitudes toward the SDGs, correlation analyses between the investigated variables, and a series of mediation analyses with the three basic psychological needs satisfaction as IVs, the factors emerging from the EFA as mediators (i.e., Environment, Equity, Health) and Satisfaction with Life as the DV. The results showed that only the Environment component of the SDGs Scale mediated the relation between Basic Psychological Needs and Satisfaction with Life. The implications of these findings are discussed in light of different theoretical frameworks, like the Basic Psychological Needs Theory (BPNT), the Person-Culture fit theory, and the Affordances Theory.

Keywords: attitude toward Sustainable Development Goals; satisfaction with life; basic psychological needs; good societal development

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1. Introduction

Despite the growing interest in social development as well as sustainability and the expanding amount of research on these topics, there is no agreement on which specific social development paths should be pursued [1] to also achieve social well-being. Economic prosperity—which appeared to be the dominant answer in the second half of the twentieth century [2–4]—has emerged as not fully explaining the process by which such development paths should be pursued [5–7]. In the 1960s, indeed, as many affluent Western societies acknowledged the limits of economic growth and post-materialistic values gained prominence, the concept of the good life evolved. This shift prompted the introduction of terms like "quality of life" and "well-being". In contrast, older terms like "happiness" were revitalized, conveying the idea that a fulfilling life extended beyond material welfare [8]. Consequently, life satisfaction emerged as a central focus in this new avenue

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of research. It is thus critical to identify new social development paradigms [2,7,9], even though the current public debate is a long way from reaching a consensus on the path to take [9]. Given the importance of the Sustainable Development Goals (SDGs) in recent years, their implementation may be the most appropriate and efficient path to achieving the best possible societal development in the shortest time, but individual psychological factors are important too.

1.1. Basic Psychological Needs and Well-Being

Well-being is emergent as the outcome of accommodation and interaction that happens in and over time through the dynamic interplay of personal, societal, and environmental structures as well as processes [10]. In psychological studies, subjective well-being (SWB) involves assessing an individual's overall satisfaction with life [11]; however, this concept is intricate and multifaceted. SWB is not a single dimension; a solitary measure cannot encapsulate the essence of subjective well-being [12]. SWB underscores an individual's evaluation of their life, encompassing general and overall satisfaction, specific domain satisfaction, pleasant emotions, and low negative emotions [13]. Perceived life satisfaction, often described as an overall cognitive assessment of one's life [14], is a significant determinant of psychological well-being [15]. Another important individual determinant of psychological well-being is motivation. Thus, the current study is rooted in the Basic Psychological Needs Theory (BPNT), which is a component of the Self-Determination Theory (SDT) [16,17]. This theory proposes the existence of three fundamental psychological needs: autonomy, relatedness, and competence. The fulfillment of these needs is universally crucial for human development and flourishing. Conversely, their frustration leads to maladjustment and psychological issues [18]. However, numerous psychologists, including those embracing a social constructivist standpoint, have rejected the notion of universally applicable psychological needs (e.g., [19]). From this relativistic viewpoint, they argue that individuals primarily, if not exclusively, benefit from satisfying the needs that align with their values or desires [20,21]. In contrast, the SDT highlights fundamental requirements that must be fulfilled to enhance psychological well-being and ensure healthy growth [22]. These essential needs encompass competence, relatedness, and autonomy, which are conceived as universally applicable across individuals and cultures, impacting various aspects of an individual's life [16,17]. The need for competence entails feeling proficient in engaging with surroundings, encountering opportunities to utilize one's abilities, and handling challenging tasks [16,17]. When the need for competence is satisfied, individuals reap psychological benefits, feeling capable of effective action and goal achievement. Relatedness pertains to a sense of connection with others, encompassing interpersonal relationships, care from and for others, and a sense of involvement in the social collective sphere [23]. Lastly, the need for autonomy refers to the aspiration to engage in self-chosen activities aligned with intrinsic interests [16]. Environments that support the need for autonomy allow people to engage in decision making and agency. Therefore, we can conclude that whether an individual's psychological needs are satisfied or frustrated is determined by their interaction with the environment [24,25].

1.2. Good Societal Development: Focussing on the Sustainable Development Goals and Life Satisfaction

The idea of a "Good Society" or, as some have referred to it, a "happy society" is quite widespread: many philosophers and spiritual leaders, from the Buddha to Aristotle, have nurtured notions of societies that resonate well with what we term here as a "Good Society" [26]. A substantial body of research is dedicated to helping individuals and policy makers to enhance their well-being. The lack of clear criteria for what constitutes a satisfying life has prevented those philosophers that have typically reflected on the good and moral value of life from verifying the practicality of their suggestions; however, since the 1970s, advancements in survey research within the realm of social sciences have led to a breakthrough in comprehending the determinants of life satisfaction [8]. Societal progress

historically aimed at addressing prevalent challenges such as ignorance, illness, and poverty. Achievements were subsequently measured by indicators like literacy rates, control of diseases, and the eradication of hunger. Corresponding social statistics have been used to track these improvements. As societies made headway in tackling these challenges, the focus shifted toward ensuring a reasonable material standard of living for all. This was predominantly assessed through per capita income gains and income security, spawning extensive research on national wealth and income distribution. These remain prominent areas of study today [8]. The above being the case, there is a need to enlarge the view on the topic, incorporating other individual and collective variables, like, for example, the relationship with the environment in which people live as well as the evaluation of the values which characterize a certain society. When individuals adopt and support qualities like values and personality traits that closely align with the cultures that they are part of, they tend to experience enhanced well-being and a more favorable self-evaluation [27]. This alignment between individuals and the characteristics of their own cultures (individual and collective factors) is referred to as "person-culture fit" [27]. Person-culture fit is a concept tightly intertwined with an individual's membership in a specific group (e.g., how well one's values, personality, or beliefs align with a culture). It cannot be delineated in isolation from the social group to which a person belongs [28]. Person-culture fit is based on the similarity of individuals' personalities, motives, values, and beliefs with those of others surrounding them [29]. Individuals who support their culture's values are expected to have a more favorable view of their cultural and social groups [28].

1.3. The Impact of the Sustainable Development Goals

Reflections of individual well-being in connection with societal development are nowadays very frequent [1,2]. Achieving good societal development has become, in recent years, a cultural value: the United Nations (UN) has introduced the concept of "well-being" to replace gross domestic product (GDP) as a proxy of development [30]. Recently, as a post-2015 Millennium Development Goal (MDG) strategy, the UN has proposed a Global Development Agenda (GDA), which advocates principles of equity and sustainability as the basis of all economic policies for both developing and developed countries [30]. The Sustainable Development Goals (SDGs), established in 2015 as successors to the Millennium Development Goals, hold a target timeline of 2030. These objectives encompass various facets of economic, societal, and environmental progress within nations [31]. The 17 UN Sustainable Development Goals (SDGs), along with their 169 targets, mark a significant achievement in fostering sustainable practices worldwide [32]. Within this intricate network composed of the 17 SDGs presented by the UN (for a more detailed description, see [30]), Goal 3, "Good health and well-being", resonates with the World Health Organization's [33] characterization of health as comprehensive physical, mental, and social well-being that goes beyond the mere absence of disease. This notion aligns with SDG3's ambition to ensure healthy lives and promote well-being in all age groups. Moreover, SDG3 forms a strong basis and a cornerstone for the achievement of the other SDGs. In fact, the use of health and well-being as benchmarks helps to assess the progress of the SDGs. Conversely, several SDGs positively influence human health and well-being [34]. Finally, Nunes et al. [34] emphasize the importance of well-being as a significant positive outcome for individuals and societies, in which satisfactory living conditions are of paramount importance. The implementation of the 2030 Agenda for Sustainable Development requires, indeed, a balanced approach that supports both health and well-being as part of an integrated development strategy. Ultimately, promoting progress toward the SDGs serves as a key measure for improving health and well-being [35]. Furthermore, several studies have highlighted the strong relationship between sustainability and the SDGs with individual and societal health and well-being (e.g., [31]). Even the study by Costanza et al. [36] — viewing the SDGs as universal goals that express the need and opportunity for the global community to build a sustainable and desirable future — interprets the development and achievement of these goals as a prerequisite for global well-being;

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however, the goals do not provide details on their synergies in achieving global human and ecosystem well-being [36]. Thus, we need to try to better understand which processes can improve the well-being and health of the global population through the societal and collective development as well as implementation of the SDGs. To achieve these goals, the present study aims to analyze the relationship between individual Basic psychological needs, people's visions of good societal development under the Sustainable Development Goals, and well-being in terms of Life Satisfaction. By seeking to frame the impact of the SDGs on life satisfaction, the present study brings an innovative advance to the literature on the topic. Specifically, the present innovative study, by developing for the first time a scale of attitudes in reference to the SDGs, allows for the operationalization of this construct. There is no research in the literature that has investigated how the SDGs impact life satisfaction when related to basic psychological needs. Such framing can be critical in emphasizing the importance of the SDGs in people's daily lives.

The material is divided into several parts: Section 2 presents the objectives and hypotheses of the study and explains the materials and methods used to conduct it. Section 3 presents the results that emerged from the preliminary analysis and the analyses conducted to test the research hypotheses. Finally, Sections 4 and 5 provide a discussion of the study, framing the results with reference to the state of the art of the SDGs. The limitations and prospects of the study, as well as the practical implications that emerged from the results, are reported in these sections.

2. Method

2.1. Aims and Hypotheses

The present study has the following aims:

- To develop a scale measuring attitudes toward the good development (GD) of society derived from widespread goals' taxonomies (i.e., UN-SDGs) and test its factorial structure, which corresponds to whether its constituent items are organized in one factor (unidimensional scale) or more factors (multi-dimensional scale). These factors do not merely represent the existence of a statistical association between items but must also be interpretable from a scientific-rational perspective;
- 2. To analyze the relationship between basic psychological needs, SDG components (which emerged from the realization of the first aim), and Satisfaction with Life;
- 3. To test the possible mediating role of factors emerging from SDG taxonomies, especially attitudes towards SDGs.

Concerning the factorial structure of the Attitude toward the SDGs Scale (Aim 1), we formulated the following hypotheses:

Hypothesis 1 (H1). The one-factor solution of the scale outperforms the multi-factorial solution.

Hypothesis 2 (H2). The reliability of the scale is more than 0.70, considered the minimum acceptable range of Cronbach's alpha.

Concerning the relationship between basic psychological needs, SDGs Scale components, and Satisfaction with Life (Aim 2) we formulated the following hypotheses:

Hypothesis 3 (H3). Basic psychological needs (i.e., Relatedness, Competence, and Autonomy; Independent Variables) are positively related to both SDGs factors (Mediating Variables) and Satisfaction with Life (Dependent Variable).

Hypothesis 4 (H4). SDGs (Mediating Variables) are positively related to Satisfaction with Life (Dependent Variable).

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Concerning the mediating role of factors emerging from the Attitude towards SDGs Scale (Aim 3), we formulated the following hypotheses:

People's basic psychological needs (i.e., Competence, Autonomy, and Relatedness) would be associated with the importance attributed to the UN's Sustainable Development Goals for the good development of society. In turn, the importance attributed to these sustainable goals would enhance respondents' satisfaction with life since personal well-being is linked to the good development of society:

Hypothesis 5 (H5). Competence need (independent variable) is positively associated with Satisfaction with Life (dependent variable), and their relationship is mediated by the Attitude toward the SDGs (Mediating Variables);

Hypothesis 6 (H6). Autonomy need (independent variable) is positively associated with Satisfaction with Life (dependent variable), and their relationship is mediated by the Attitude toward the SDGs (mediating variables);

Hypothesis 7 (H7). Relatedness need (Independent Variable) is positively associated with Satisfaction with Life (dependent variable), and their relationship is mediated by the Attitude toward the SDGs (mediating variables).

2.2. Sample and Procedure

We administered an online questionnaire to a general Italian sample (N = 206) with a mean age of 33.39 years (18–68; sd = 12.14); 68.9% were females and 28.6% were males (2.5% did not answer). More detailed descriptive statistics regarding the sociodemographic characteristics of the sample are given below in Table 1. An online questionnaire was implemented by using the Google Forms platform. Participants were recruited from different regions of Italy by university students for their master's or bachelor's theses. Data were collected from February 2021 to March 2022.

Table 1. Sociodemographic characteristics of the sample.

Variable	Description	Number of Respondents	Share of Sample (%)
	Female	142	68.9
Condon	Male	59	28.6
Gender	Other	0	0.0
	I don't want to answer this question	5	2.5
	18–25	68	33.0
	26–35	82	39.8
A ()	36–45	20	9.7
Age range (years)	46–55	17	8.2
	56–68	16	7.8
	No answer	3	1.5
	Yes	129	62.6
Student (being a student)	No	76	36.9
	No answer	1	0.5
	No schooling	0	0.0
	Primary or equivalent	0	0.0
	Secondary or equivalent	9	4.4
Education	Bachelor's or equivalent	48	23.3
	Master's or equivalent	102	49.5
	Doctorate or equivalent	20	9.7
	No answer	27	13.1
Living area's urbanization	Rural	16	7.8

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	Suburban	58	28.2
	Urban	131	63.5
	No answer	1	0.5
	Unemployed	50	24.3
	Employed	87	42.2
Employment	Retired	2	1.0
	Other	13	6.3
	No answer	54	26.2

The questionnaire took approximately 20 min to fill in. According to the ethical standards included in the seventh revision of the Declaration of Helsinki [37], the participants were informed about all relevant aspects of the study (e.g., methods and institutional affiliations of the researchers) before they started to fill in the questionnaire. The local ethics committee of the University of Roma Tre approved the research protocol on 16 February 2021.

2.3. Measures

Satisfaction with Life Scale ([14], SWLS): 5 items (e.g., "Your life conditions are excellent") measuring satisfaction toward actual vs. expected life circumstances, response scale from 1 (= It does not describe me at all) to 9 (= It describes me exactly). Higher ratings indicate higher individual satisfaction with life (α = 0.86).

Basic Psychological Needs Scale [38] to measure the satisfaction of basic psychological needs: 9 items which assess the satisfaction toward Autonomy (3 items, e.g., "I feel my choices express my true self", α = 0.88), Relatedness (3 items, e.g., "I feel close and connected with other people who are important to me", α = 0.91), and Competence (3 items, e.g., "I feel I can successfully complete difficult tasks, α = 0.90). The response scale was a 9-point Likert-type one, ranging from 1 (= It does not describe me at all) to 9 (= It describes me exactly).

Attitudes toward the 17 UN Sustainable Development Goals (SDGs) Scale, (ad hoc built scale): 17 items measuring the importance attributed to each of the UN Sustainable Development Goals (e.g., Zero Hunger) for the positive development of society (e.g., "In the development of a good society, which of these goals should be a top priority and which may be a lower priority?"). The response scale was a 9-point Likert-type one, ranging from 1 (= This goal should not be a priority at all) to 9 (= This goal should be a top priority).

The scales described above are present both in the Italian and English versions in the Appendix A.

2.4. Statistical Analysis

Data analyses were performed with SPSS version 27, including the PROCESS model macro [39]. We conducted a Principal Components Analysis (PCA) (Promax rotation, Kaiser normalization) on Attitudes toward SDGs Scale. PCA is a technique for highlighting the existence of a structure of latent traits that cannot be measured directly within a set of directly observable items. Scree plots were also used to confirm the expected number of factors and the factorial loading of each item in the expected component (i.e., subscale or factor).

Then, we calculated descriptive statistics and zero-order correlations between variables. Finally, we conducted a series of mediation analyses with the 3 basic psychological needs satisfaction as IVs, the factors emerging from the PCA as mediators (i.e., Environment, Equity, Health), and Satisfaction with Life as the DV.

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3. Results

3.1. Factorial Structure of the Attitude toward the Sustainable Development Goals Scale (Aim 1)

A PCA performed on the Attitude toward the SDGs Scale yielded a three-factor solution explaining 64.13% of the variance (see Table 2). H1 is thus rejected, while H2 is confirmed due to Cronbach's alphas of the Scale being equal to or greater than 0.80. Cronbach alpha values of ≥ 0.9 are considered excellent, values ≥ 0.8 are considered good, and values ≥ 0.7 are considered acceptable. The newly developed scale shows good reliability properties.

	Factor 1	Factor 2	Factor 3
Items	Environment	Equity	Health
Life below water	0.92		
Life on land	0.89		
Affordable and clean energy	0.74		
Climate action	0.73		
Responsible consumption and production	0.69		
Clean water and sanitation	0.63		
Industry, innovation, and infrastructures	0.51		
Partnership for the goals	0.43		
Decent work and economic growth		0.84	
Sustainable cities and communities		0.75	
Gender equity		0.74	
Reduced inequalities		0.61	
Quality education		0.48	
Peace, justice, and strong institutions		0.39	
Zero hunger			0.86
No poverty			0.71
Good health and well-being			0.58
Eigenvalues	8.00	1.78	1.12
Explained variance	47.06	10.47	6.61

The Kaiser–Meyer–Olkin sampling adequacy measure obtained fairly high values (= 0.90), demonstrating that commonalities were high, and the correlation matrix of the sample was appropriate for the analysis to proceed [40].

The PCA that we conducted allowed us to extract three subfactors: (a) Environment (eight items), measuring the UN Sustainable Development Goals related to societal environmental aims and composed entirely of items referring to the natural world (e.g., Responsible consumption and production, α = 0.89); (b) Equity (six items), measuring goals related to reducing societal inequalities and composed entirely of items referring to the human realm (e.g., Gender Equity, α = 0.87); and (c) Health (three items), measuring goals aimed at societal well-being composed entirely of items referring to the component of health (e.g., Good Health and Well-being, α = 0.80).

3.2. Relationships among the Investigated Variables (Pearson's r) (Aim 2)

Table 3 shows the descriptive statistics concerning the variables under study and the bivariate correlations between them.

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	M (SD)	1.	2.	3.	4.	5.	6.	7.
1. Satisfaction with Life	5.87 (1.60)							
2. Autonomy	6.68 (1.52)	0.65 ***						
3. Relatedness	7.23 (1.42)	0.54 ***	0.64 ***					
4. Competence	6.85 (1.46)	0.51 ***	0.75 ***	0.64 ***				
5. Environment	7.96 (0.96)	0.19 **	0.19 **	0.16 *	0.21 **			
6. Equity	8.26 (0.93)	-0.01	0.13	0.08	0.17 *	0.64 ***		
7. Health	8 33 (0 95)	0.04	0.13	0.11	0.11	0.57 ***	0.66 ***	

Table 3. Descriptive statistics and Pearson's correlation matrix.

Note: *** < 0.001, ** < 0.01, and * < 0.05. The numbers in the column correspond to the numbers in the row (e.g., 1. = Satisfaction with Life).

As shown in Table 3, the variable Satisfaction with Life was positively correlated with all components of the Basic Psychological Needs Scale (Autonomy, Relatedness, and Competence). Specifically, the strongest correlation was with Autonomy (r = 0.65, p < 0.001), then with Relatedness (r = 0.54, p < 0.001), and finally with Competence (r = 0.51, p < 0.001). On the other hand, concerning the three factors derived from the Attitudes towards the 17 UN Sustainable Development Goals scale, Satisfaction with Life was only positively associated with the Environment factor, with a low but statistically significant correlation (r =0.19, p < 0.01). The relationships between the three components of the Basic Psychological Needs scale were positive, with high magnitude of the effect: Autonomy correlated with Relatedness and Competence with r = 0.64, p < 0.001 and r = 0.75, p < 0.001, respectively. Similarly, the relationship between Relatedness and Competence showed a similar result, with r = 0.64, p < 0.001. Looking specifically at the correlations between the single components of the Basic Psychological Needs scale and the other variables considered, in addition to the correlations already mentioned, Autonomy, Relatedness, and Competence showed a low but significant positive relationship with the Environment component (r =0.19, p < 0.01; r = 0.16, p < 0.05; r = 0.21, p < 0.01, respectively). Competence was also correlated with the Equity factor of the SDGs, with r = 0.17 and p < 0.05. In conclusion, we can highlight the intercorrelation that characterizes the three dimensions of the SDGs scale just mentioned. Environment was found to be positively correlated with both Equity (r = 0.64, p < 0.001) and Health (r = 0.57, p < 0.001), and these last two variables were also found to be correlated with each other (r = 0.66, p < 0.001). A final result to highlight is the fact that the variable Health was not correlated with any other variable, except with the other two factors of the scale of which it is a part (as just mentioned). Therefore, H3 can be partially accepted and H4 is accepted only concerning the Environment dimension.

3.3. Mediation Analysis (Aim 3)

Regarding the primary analyses of the study, run for testing the hypotheses, three mediation models were analyzed using the PROCESS macro [39] included in the SPSS software. Specifically, three simple mediation models (model 4) with three parallel mediators were utilized to test the hypotheses. The results of the three mediation analyses, controlling for the effect of the covariates "Gender" and "Age", are shown below. Specifically, the effect of Competence on Satisfaction with Life, mediated by Attitudes toward SDGs (H5), is shown in Figure 1 and Table 4, whilst the effect of Autonomy, mediated by Attitudes toward the SDGs (H6), is shown in Figure 2 and Table 5. Concerning the mediation effect of Attitudes toward the SDGs in the relationship between Relatedness and Satisfaction with Life (H7), it was not significant and therefore is not reported. The results for the specific hypotheses are reported below.

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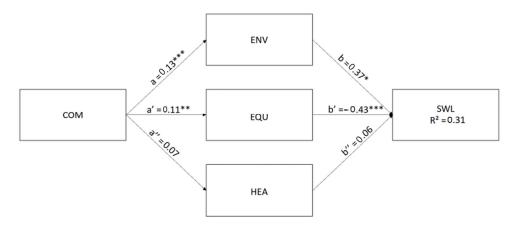


Figure 1. The mediating role of Attitudes toward the SDGs in the relationship between Basic Psychological Need of Competence and Satisfaction with Life. Note: COM = Competence; ENV = Environment; EQU = Equity; HEA = Health; SWL = Satisfaction with Life; *p < 0.05; *** p < 0.01; **** p < 0.001.

Table 4. Direct, indirect, and total effects of Competence on Satisfaction with Life.

	Coefficient (b)	BootSE	Bootstrap 95% CIs
$COM \to ENV \to SWL$	0.05	0.03	[0.00, 0.13]
$COM \to EQU \to SWL$	-0.05	0.04	[-0.15, 0.01]
$COM \to HEA \to SWL$	0	0.02	[-0.03, 0.04]
DIRECT	0.54	0.07	[0.41, 0.67]
TOTAL	0.55	0.07	[0.42, 0.68]

Note: COM = Competence; ENV = Environment; EQU = Equity; HEA = Health; SWL = Satisfaction with Life.

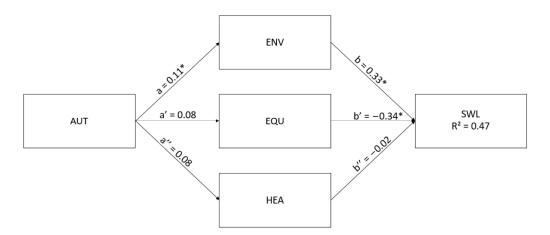


Figure 2. The mediating role of Attitudes toward SDGs in the relationship between Basic Psychological Need of Autonomy and Satisfaction with Life. Note: AUT = Autonomy; ENV = Environment; EQU = Equity; HEA = Health; SWL = Satisfaction with Life; *p < 0.05.

Table 5. Direct, indirect, and total effects of Autonomy on Satisfaction with Life.

	Coefficient (b)	BootSE	Bootstrap 95% CIs
$AUT \rightarrow ENV \rightarrow SWL$	0.04	0.02	[0.00, 0.09]
$AUT \to EQU \to SWL$	-0.03	0.02	[-0.08, 0.01]
$AUT \to HEA \to SWL$	0	0.01	[-0.03, 0.02]
DIRECT	0.67	0.06	[0.56, 0.78]
TOTAL	0.68	0.06	[0.57, 0.79]

Note: AUT = Autonomy; ENV = Environment; EQU = Equity; HEA = Health; SWL = Satisfaction with Life.

Hypothesis 5a (H5a). Competence positively predicts Attitude toward the Environment-related SDGs (b = 0.13; p < 0.001). In turn, Attitude toward the Environment has a direct positive and significant effect on Satisfaction with Life (b = 0.37; p < 0.05). Finally, as shown in Table 4, the indirect (mediated) effect of Competence on Satisfaction with Life is also positive and significant (b = 0.05; p < 0.05).

Hypothesis 5b (H5b). Competence positively predicts Attitude toward the Equity-related SDGs (b = 0.11; p < 0.05), while Attitude toward Equity has a direct negative and significant effect on Satisfaction with Life (b = -0.43; p < 0.001). Despite the significance of direct effects, as shown in Table 4, the indirect (mediated) effect of Competence on Satisfaction with Life is non-significant.

Hypothesis 5c (H5c). Competence does not predict Attitude toward Health-related SDGs. Attitude toward Health has non-significant direct effect on Satisfaction with Life. The indirect (mediated) effect of Competence on Satisfaction with Life is non-significant.

Hypothesis 6a (H6a). As for the effect of Autonomy on Satisfaction with Life, mediated by Attitude toward the Environment-related SDGs, it can be seen in Figure 2 that Autonomy positively predicts Attitude toward the Environment (b = 0.11; p < 0.05). In turn, Attitude toward the Environment has a direct positive and significant impact on Satisfaction with Life (b = 0.33; p < 0.05). Finally, as shown in Table 5, the indirect (mediated) effect of Autonomy on Satisfaction with Life is also positive and significant (b = 0.04; p < 0.05).

Hypothesis 6b (H6b). Autonomy does not predict Attitude toward the Equity-related SDGs, while Attitude toward Equity has a direct negative and significant effect on Satisfaction with Life (b = -0.34; p < 0.05). The indirect (mediated) effect of Competence on Satisfaction with Life is non-significant.

Hypothesis 6c (H6c). Autonomy does not predict Attitude toward the Heath-related SDGs. Attitudes toward Health has no direct effect on Satisfaction with Life. The indirect (mediated) effect of Competence on Satisfaction with Life is non-significant.

The outcomes (see Tables 4 and 5) thus show that the Basic Psychological Needs of Competence and Autonomy have both a direct and an indirect impact (i.e., mediated by Attitude toward the sustainable goal factor "Environment") on Satisfaction with Life. In contrast, Attitudes toward the Sustainable Development Goal factors "Equity" and "Health" do not seem to mediate the relationship between Basic Psychological Needs and Satisfaction with Life. Finally, the Basic Psychological Need of Relatedness satisfaction showed no significant results, thus it has neither a direct nor an indirect impact on Satisfaction with Life. Therefore, considering Aim 3, for H5a and H6a the null hypothesis is rejected in favor of the alternative hypothesis. For hypotheses H5b, H5c, H6b, H6c and H7, the null hypothesis cannot be rejected.

4. Discussion

Kjell [41] suggested that explicitly integrating well-being aims within the sustainability process framework, can enhance its current standing. Currently, sustainable well-being is conceptualized as the pursuit of happiness and satisfaction with life [42] aligned with environmentally friendly behaviors (e.g., [43]) or engagement in sustainable initiatives (e.g., [44]). With the general objective of investigating the relationship between individual basic psychological needs, sustainable development, and well-being, the study aimed to verify multiple hypotheses.

4.1. Factorial Structure of the Attitude toward the Sustainable Development Goals Scale (Aim 1)

The first research questions (Aim 1) were built around the test of the factorial structure and reliability of the Attitude towards the Sustainable Development Goals Scale,

which showed good psychometric properties in the Italian context. The Scale was found to be multi-dimensional, being composed of three factors (i.e., H1 was confirmed), labeled Environment, Equity, and Health: every dimension was found to have good internal consistency (i.e., H2 was confirmed). However, these first results are built on an exploratory basis and the factorial structure of the Scale should be verified with different approaches, like Confirmatory Factor Analysis, and in different samples. The Scale responds to the aim of detecting the self-perceptions of people about the 17 SDGs according to their importance for societal good development. The main novelty of our study precisely concerns this scale, which had never been developed previously. Di Fabio & Rosen [35] had proposed the Sustainable Development Goals Psychological Inventory, built to provide a thorough examination of the interest, motivation, and self-efficacy of Italian participants about the same goals. Compared to it, the scale investigated here (the Attitude towards the Sustainable Development Goals Scale) is more oriented towards measuring the priority given by people to each SDG to obtain good societal development. It is therefore an individual measure, but societally oriented, which can be integrated with the one developed by Di Fabio and Rosen [35] with the aim of investigating peoples' perceptions of the SDGs in both personal and societal frameworks. This scale moreover could contribute to the purpose of structuring more tailor-made interventions and highlighting specific needs with different targets, areas, and contexts. Furthermore, it constitutes a promising tool to investigate folk theories of Good Development and to test them empirically.

4.2. Relationships among the Investigated Variables (Aim 2)

Concerning the aim to investigate the relationships between variables (Aim 2), we could partly confirm H3. Basic psychological needs were all positively correlated with Satisfaction with Life and only with the Environment factor of the Attitude toward the SDGs Scale; Competence need positively correlated with the Equity factor of the SDGs. Concerning H4, it was only confirmed for the correlation between SWL and Environment factor of Attitudes toward the SDGs; there were no significant correlations between the Health factor of the newly developed scale and Satisfaction with Life. This is probably due to the specific content of the factor related to a concept of health bound to the economic sides of well-being linked to the measurement of gross domestic product, like the eradication of poverty and hunger, as previously discussed in the introduction [8]. The data were collected during the COVID-19 pandemic. This certainly had an influence on the highlighted results: in Italy there was a heavy shift from the consideration and attainment of bio-psycho-social health as well as well-being [45] to a biomedical approach devoted to the preservation of life in terms of the mere absence of COVID-19, neglecting the psychological and social cores. Despite the central role that could have been devoted to the elimination of hunger and poverty, issues that have developed vertiginously during the pandemic, the importance associated with these societal aims was not found to be linked to Satisfaction with Life in our study. Indeed, the Health factor did not function as a mediator between BPNs and SWL. This is partly due to our sampling technique, based on the snowball sampling procedure, which did not allow us to reach people who were experiencing important economic issues. Given that Socio-Economic Status (SES), particularly income, is a highly sensitive and confidential piece of data (e.g., see [46,47]), we decided to make the answer about monthly income not mandatory. Ninety-eight participants reported their monthly income budget: the mean was EUR 787.90. We additionally asked about the subjective perception of satisfaction with their budget with the following question, rated on a Likert-type scale from 1 to 9: "How much are you satisfied with your monthly budget". Of the participants, 78.2% reported that their monthly budget was quite adequate. Like the Health factor, the Equity factor was not associated with Satisfaction with Life, neither positively nor negatively. This finding was not expected and was also confirmed in the mediation analyses, where Equity did not qualify as a significant mediator in the relationship between Basic Psychological Needs and Satisfaction with Life. Both unexpected results could be read in the light of the affordances theory [48]. Gibson [48]

introduced reciprocity and mutuality between organisms and environments through the notion of affordances but did not account for the societal and historical dimensions of human life [49]. "The concept of affordances most basically highlights the congruence between structural features of the environment and the functional possibilities of the perceiver. When an individual perceives this congruence, there is awareness of a fit. Environmental features are experienced as having a functional meaning for the individual. The features afford some action or extend some potential functional consequence" (p. 287, [50]). The point that environmental features are experienced as having a functional meaning makes affordance a very important concept, as well as when the term "environment" is not encompassing merely its physical connotation, i.e., objects, places, etc. Indeed, social psychologists within an ecological framework have productively worked to extend Gibson's theory about the social reality of human life. Social affordances emerge from the way that people behave. They are relational properties that arise because of behavior and are of a higher order than mere physical properties [51]. According to Pedersen and Bang [49], when examining human societies and the unique nature of the relationship between individuals and their surroundings, affordances go beyond mere environmental stimuli. They are intricately linked with evolving societal norms and changes, in which individuals participate together and consistently contribute. People progress through their personal actions within a social context. Such a large societal realm is not a product of their psyche, nor can it be simplified to the social realm alone. Consequently, what individuals perceive as affordances are unavoidably tied to and reliant upon distinct societal settings, which serve as the foundational backdrop for their actions. The proposed redefined notion of affordance in societal terms [49] holds promising implications for an ecological developmental theory and cultural as well as cross-cultural theories of human existence. Looking through an ecological lens, development must be grasped within the context of reciprocal interaction between individuals and their surroundings. The notion of person-culture fit, and societal affordance can offer interesting keys to interpret our findings. Such results must be read with caution due to the delicate historical moment, i.e., the pandemic time in its peak phases, in which the study was conducted. Marmot and Allen [52] suggest that COVID-19 exposed the fault lines in society and amplified inequalities. COVID-19 imposed on pre-existing health inequalities; indeed, people with a more fragile social position suffered from the devastating effects of the pandemic [53], having the most serious repercussions in terms of health implications in the short term and even in the long run. In such a scenario, considering the difficulty of obtaining an equitable health status could have had a negative impact on Satisfaction with Life, as highlighted in our mediation section in which the importance attributed to the achievement of social Equity is negatively associated with SWL. Furthermore, the novelty of this study was that it investigated the relationship between basic psychological needs and the importance given to achieving the SDGs for the good development of society.

4.3. Mediation Analysis (Aim 3)

Lastly, regarding the mediational role of the importance attributed to each of the UN's sustainable goals for the good development of society factors (Environment, Equity, and Health) in the relationship between the satisfaction of people's basic psychological needs (Competence, Autonomy, and Relatedness) and respondents' satisfaction with life we (Aim 3) partially confirmed H5, which tested the role of Competence, and H6, which tested the role of Autonomy, and fully rejected H7, which tested the role of Relatedness. When considering the mediators, only the Environment component functioned as a significant mediator, so we confirmed H5a and H6a but rejected H5b, H5c, H6b and H6c. The fundamental role of the importance attributed to the Environment in Satisfaction with Life can be traced in the discussion of the outer and inner qualities of SWL. A distinction is drawn between qualities existing in the environment and those within an individual: Lane [54] emphasizes this distinction by contrasting the "quality of society" with the "quality of persons". However, this fundamental insight often goes missing in many social policy

conversations. By considering the interplay between life chances versus life outcomes and outer qualities versus inner qualities, according to Veenhoven [55], a four-fold matrix emerges (Table 6).

Table 6. Four qualities of life.

	Outer Qualities	Inner Qualities			
Life chances	Livability of the environment	Life ability of the Person			
Life results	Utility of life	Satisfaction with life			

Source: [55].

We have underlined in bold the constructs belonging to Veenehoven's four qualities of life that we have investigated in our study [55]. The vertical axis represents the difference between chances and results, while the horizontal axis distinguishes between external and internal qualities. The upper half of the matrix presents potential qualities of life: external opportunities in one's environment and the inner capacities to make use of them. These environmental opportunities are termed "livability", while personal capacities are termed "life ability". This distinction is analogous to the sociological contrast between "social capital" and "psychological capital". According to Veenhoven [8], the lower half of Table 6 encompasses quality of life, concerning its outcomes. These outcomes are assessed for their value to an individual and their value within the broader environment. The external value is termed the "utility" of life, while the inner assessment is termed "satisfaction" with life. Although related, not all useful lives are necessarily happy, and not everyone living a seemingly unproductive life necessarily lacks concern. The top-left quadrant of the matrix defines the concept of favorable living conditions, also known as "welfare" or "level of living". The term "livability" is a more encompassing description, free from the restrictive implications of material conditions. On one hand, ecologists view livability in natural surroundings, examining factors like pollution and environmental degradation. City planners, on the other hand, consider livability in the built environment, addressing issues like traffic congestion and urban development. Both perspectives contribute to the understanding of a good life, whether as a product of natural ecosystems or human intervention. Ecologists and city planners' connotation of livability resembles the components belonging to the Environment factor of the Attitude toward the Sustainable Development Goals scale (e.g., Life below water, Life on Land, Affordable and clean energy, Climate action, to mention some of them. The preeminent role of nature in the factor composition is evident: indeed, comprehensive empirical, evolutionary, and cross-cultural evidence supports the importance of connection and interdependency with nature for well-being (e.g., [56]). A key role could have been played by the concrete possibility to take action to reach the goals: pro-environmental behaviors were easier to be adopted during the pandemic (e.g., people could easily invest in responsible consumption and production in local business) compared to the behaviors linked to the pursuit of social equity goals. Moreover, we can argue that the Environment factor was the factor in which Competence and Autonomy needs have impacted the most because there was a fit in people need-societal affordance, probably through perceived behavioral control. Another important aspect to consider is that the equity-related goals, as well as the health-related ones, refer to human beings, while the environment-related ones mainly refer to nature and, in part, to the surrounding built environment. Those who give high importance to the achievement of social equity and human rights (hunger, poverty, etc.) probably strongly feel that the failure to achieve them calls them to account in the first person for an injustice between similar human beings (different from the goals referring to the nonhuman environment). This lack of affordances for one's values could lower subjective well-being in terms of satisfaction with life through frustration, especially if the importance given to these goals is predicted by a satisfaction with the need for competence (e.g., one could think that "I have the ability to manage my life, but I am not able to do

anything for my neighbor"). Research interest continues to focus on environmental sustainability and its impact on happiness and satisfaction with life within the context of sustainable development [57]. Existing literature underscores the need for environmental sustainability to ensure enduring as well as sustainable happiness and well-being within nations [58,59]. Different studies highlighted the direct, indirect, and mediating effects between environmental sustainability and happiness [59-62]. Lamb et al. [63] demonstrate that certain nations manage to sustain robust economies while minimizing damage to nature, resulting in higher levels of welfare and happiness. Proposing that sustainability aims to reduce environmental stress while maximizing human happiness, Dietz et al. [64] analyzed nations for their social, economic, and environmental sustainability, and their effects on happiness. They introduce the concept of the environmental efficiency of wellbeing, advocating for minimizing environmental harm to maximize human welfare. This concept aligns with sustainability definitions as it encompasses both happiness and the level of environmental consumption. These results echo our findings, in which the Environment dimension functions as a mediator between the need for Competence and Autonomy and SWL. The inclusion of a mediator never considered in the relationship between the satisfaction of psychological needs and well-being, such as the importance of environment-related SDGs, is an important enrichment that our study gives to the literature on the subject.

4.4. Limits and Future Prospects

The study, however, has some limitations: first, it is cross-sectional and hence not completely generalizable; second, it does not allow for the experimental assessment of the causative nature of the models' linkages. Another weakness of this study is the small sample size, which, while acceptable, could have been expanded to provide more statistical power. An additional disadvantage of the sample is its lack of generalizability and representativeness due to its composition of primarily Italian respondents (largely women). This lack of generalizability may necessitate fresh research on the subject, possibly with larger and more diverse samples. A further limitation of the present study is the lack of literature on the topic, which did not allow for an in-depth comparison with other quantitative studies. In fact, none of the articles on the topic related Basic Psychological Needs to the SDGs and Satisfaction with Life. A final limitation concerns the scale used to measure the SDGs. In the present study, the scale was analyzed only in an exploratory manner (i.e., through PCA), while further confirmatory studies (i.e., Confirmatory Factor Analysis) will be needed to confirm the factor structure of the scale (i.e., of the specific SDGs).

5. Conclusions

Good societal development has been a focal point for scholars in political science and sociology [65]. These fields delve into the mechanics of societal transformation and the catalysts as well as outcomes of such progress. For instance, a faction of political scientists utilized data from the World Values Survey to probe post-materialistic concerns and values [66-68]. Their investigations revealed an upsurge in post-materialistic concerns, and they formulated a modernization theory suggesting that industrialization and post-industrialization generally lead to a stronger embrace of secular values over traditional ones and a shift from survival values to self-expression values, respectively [67]. While underscoring the significance of socioeconomic advancement, they also acknowledge that "societies chart distinct trajectories even when influenced by identical modernization forces, as specific factors like a society's cultural heritage play a role in shaping its developmental path". In Folk Theories of Social Change, Kashima et al. [69] studied the universalistic set of lay assumptions towards societal development; in our study, we addressed lay theories about societal development and, therefore, folk theories of societal development based on the Sustainable Development Goals framework. Krys et al. al. [70] underlined that what lay people understand and recognize as societal development may not necessarily translate into actual processes of societal development. Nevertheless, lay people are important

actors in development processes as development is about the enhancement of their living conditions, and they often have an active role in influencing their societies (e.g., through elections). In terms of the practical and applicative impacts of the study results, understanding how lay people conceptualize development and which individual factors influence this conceptualization may help policymakers and scientists steer societies in a more tailored, indigenously defined, and efficient manner. Promoting and encouraging people to take simple environment-oriented actions can, on the one hand, satisfy psychological needs of competence and autonomy, and, on the other hand, make people feel active in achieving the SDGs related to the environment. To do this, pro-environmental initiatives could be promoted both locally and nationally (or more broadly), seeking to actively engage people in achieving these SDGs. Examples of such activities may be neighborhood groups that voluntarily restore or maintain local green areas. Other examples may be political or government initiatives that incentivize people to implement pro-environmental behaviors (such as recycling or sustainable transportation). The present study has investigated folk theories of Good Development based on the attitude to the UN-SDGs in relationship to individual factors such as basic psychological needs and subjective well-being at a national level, but future comparative cross-cultural studies are needed to enrich this research line.

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Appendix A

MEASUREMENT SCALES REPORTED IN THE QUESTIONNAIRE (ENGLISH TRANSLATION)

Satisfaction with Life Scale:

doesn't		describes		describes		describes		describes
describe		me a		me		me very		me
me at all		little		moderately		well		exactly
1	2	3	4	5	6	7	8	9

- 1. In most ways your life is close to your ideal
- 2. The conditions of your life are excellent
- 3. You are satisfied with your life
- 4. So far you have gotten the important things you want in life
- 5. If you could live your life over, you would change almost nothing

	Basic	Psycho	logical	Needs	Scale:
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doesn't		describes		describes		describes		describes
describe		me a		me		me very		me
me at all		little		moderately		well		exactly
1	2	3	4	5	6	7	8	9

1. Autonomy

- a. You feel you have been doing what really interests you
- b. You feel a sense of choice and freedom in the things you undertake
- c. You feel your choices express who you really are

2. Competence

- d. You feel you can successfully complete difficult tasks
- e. You feel competent to achieve your goals
- f. You feel capable at what you do

3. Relatedness

- g. You feel connected with people who care for you, and for whom you care
- h. You feel close and connected with other people who are important to you
- i. You experience a warm feeling with the people you spend time with

Attitudes toward the 17 UN Sustainable Development Goals:

"In the development of a good society, which of these goals should be a top priority and which may be a lower priority?"

This goal should not be a priority at all.		This goal should be a small priority.		This goal should be a moderate priority.		This goal should be an important priority.		This goal should be a top priority.
1	2	3	4	5	6	7	8	9

- 1. No poverty (End poverty in all its forms everywhere)
- 2. No hunger (End hunger, achieve food security and improved nutrition and promote sustainable agriculture)
- 3. Good health and well-being (Ensure healthy lives and promote wellbeing for all, at all ages)
- 4. High quality education (Ensure inclusive and equitable quality education and lifelong learning opportunities for all)
- 5. Gender equality (Achieve gender equality and empower all women and girls)
- 6. Clean water and sanitation (Ensure availability and sustainable management of water and sanitation for all)
- 7. Affordable and clean energy (Ensure access to affordable, reliable, sustainable and modern energy for all)
- 8. Decent work and economic growth (Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all)
- 9. Industry, innovation and infrastructure (Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation)
- 10. Reduced inequalities (Reduce inequality in and among countries)
- 11. Sustainable cities and communities (Make cities and human settlements inclusive, safe, resilient and sustainable)
- 12. Responsible production and consumption (Ensure sustainable consumption and production patterns)
- 13. Climate action (Take urgent action to combat climate change and its impacts)

- 14. Life below water (Conserve and sustainably use the oceans, seas and marine resources)
- 15. Life on land (Protect, restore and promote sustainable use of ecosystems, including manage forests, combat desertification, reverse land degradation and halt biodiversity loss)
- 16. Peace, justice and strong institutions (Promote peaceful and inclusive societies, including providing access to justice for all and building effective, accountable institutions)
- 17. Partnership for the above sixteen goals (Strengthen global efforts and partnerships for achieving sustainable development)

MEASUREMENT SCALES REPORTED IN THE QUESTIONNAIRE (ITALIAN VERSION)

Scala sulla Soddisfazione di Vita:

Non mi descrive		Mi descrive		Mi descrive moderatamente		Mi descrive		Mi descrive perfettamente
affatto		poco				bene		
1	2	3	4	5	6	7	8	9

- 1. Per la maggior parte la tua vita si avvicina al tuo ideale
- 2. Le tue condizioni di vita sono eccellenti
- 3. Sei soddisfatto della tua vita
- 4. Fino ad ora hai ottenuto le cose importanti che vuoi nella vita
- 5. Se potessi vivere la tua vita di nuovo, non cambieresti quasi nulla

Scala sui Bisogni Psicologici di Base:

Non mi		Mi		Mi descrive		Mi		Mi descrive	
descrive	descrive			moderatamente	descrive			perfettamente	
affatto		poco				bene			
1	2	3	4	5	6	7	8	9	

- 1. Autonomia
 - a. Senti di aver fatto ciò che veramente ti interessa
 - b. Provi un senso di scelta e libertà nelle cose che intraprendi
 - c. Senti che le tue scelte esprimono chi sei veramente
- 2. Competenza
 - a. Ti senti in grado di completare con successo compiti difficili
 - b. Ti senti competente nel raggiungere i tuoi obiettivi
 - c. Ti senti capace di quello che fai
- 3. Relazioni
 - a. Ti senti connesso con le persone che si prendono cura di te e con quelle a cui tu tieni
 - b. Ti senti vicino e connesso con le altre persone che sono importanti per te
 - c. Provi una sensazione positiva con le persone con le quali trascorri del tempo

Atteggiamento nei confronti dei 17 Obiettivi di Sviluppo Sostenibile delle Nazioni Unite:

"Nello sviluppo di una buona società, quale di questi obiettivi dovrebbe essere una priorità assoluta e quale può essere una priorità di minore importanza?"

Questo obiettivo non dovrebbe essere una priorità.		Questo obiettivo dovrebbe avere una bassa priorità.		Questo obiettivo dovrebbe avere una moderata priorità.		Questo obiettivo dovrebbe avere un'alta priorità.		Questo obiettivo dovrebbe avere un'assoluta priorità.
1	2	3	4	5	6	7	8	9

- 1. Sconfiggere la povertà. (Porre fine alla povertà in tutte le sue forme ovunque)
- 2. Sconfiggere la fame. (Porre fine alla fame, raggiungere la sicurezza alimentare e migliorare la nutrizione e promuovere un'agricoltura sostenibile)
- 3. Salute e benessere. (Garantire una vita sana e promuovere il benessere per tutti, a tutte le età)
- 4. Istruzione di qualità. (Garantire istruzione di qualità inclusiva ed equa e opportunità di apprendimento permanente per tutti)
- 5. Parità di genere. (Raggiungere l'uguaglianza di genere e responsabilizzare tutte le donne e le ragazze)
- 6. Acqua pulita e servizi igienico-sanitari. (Garantire a tutti la disponibilità e la gestione sostenibile dell'acqua e dei servizi igienici)
- 7. Energia pulita e accessibile. (Garantire a tutti l'accesso a un'energia economica, affidabile, sostenibile e moderna)
- 8. Lavoro dignitoso e crescita economica. (Promuovere una crescita economica sostenuta, inclusiva e sostenibile, un'occupazione piena e produttiva e un lavoro dignitoso per tutti)
- 9. Imprese, innovazione e infrastrutture. (Costruire infrastrutture resilienti, promuovere un'industrializzazione inclusiva e sostenibile e promuovere l'innovazione)
- 10. Ridurre le disuguaglianze. (Ridurre la disuguaglianza nei e tra i paesi)
- 11. Città e comunità sostenibili. (Rendere le città e gli insediamenti umani inclusivi, sicuri, resilienti e sostenibili)
- 12. Consumo e produzione responsabili. (Garantire modelli di produzione e consumo sostenibili)
- 13. Lotta contro il cambiamento climatico. (Agire con urgenza per combattere il cambiamento climatico e i suoi impatti)
- 14. La vita sott'acqua. (Conservare e utilizzare in modo sostenibile gli oceani, i mari e le risorse marine)
- 15. La vita sulla terra. (Proteggere, ripristinare e promuovere l'uso sostenibile degli ecosistemi, compresa la gestione delle foreste, combattere la desertificazione, invertire il degrado del suolo e arrestare la perdita di biodiversità)
- 16. Pace, giustizia e istituzioni solide. (Promuovere società pacifiche e inclusive, compreso l'accesso alla giustizia per tutti e la creazione di istituzioni efficaci e responsabili)
- 17. Partnership per gli obiettivi (Rafforzare l'impegno e le partnership globali per raggiungere lo sviluppo sostenibile)

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