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The relationship of vegetarianism with individual and collective well-being

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Resumen en español

La relación del vegetarianismo con el bienestar individual y colectivo

El vegetarianismo hoy en día ha trascendido sus fronteras de una dieta específica hacia una forma de vida más consciente. Esto es debido a su positiva interrelación con el bienestar de la sociedad y del medio ambiente, y por ello constituye un área de estudio importante, ya que activamente participa en la preservación del bienestar global. Nuestro objetivo en la presente investigación es abordar el vegetarianismo desde la perspectiva del bienestar subjetivo, de la conexión con la naturaleza así como estudiar los agentes que fortalezcan la adherencia a las dietas vegetarianas para crear unas sociedades más sostenibles en el tiempo. Nuestro enfoque se centra en factores como la conexión con la naturaleza y el comportamiento pro-ambiental, porque ambos exhiben unos vínculos únicos con el bienestar subjetivo y la adherencia vegetariana lo que nos lleva a desarrollar e implementar intervenciones políticas que cultiven estas experiencias en los individuos, en su adopción de unos estilos de vida más sostenibles.

Analizamos los siguientes aspectos del vegetarianismo: su relación con el bienestar subjetivo, el papel que desempeña la conexión con la naturaleza sobre la relación anterior y la influencia del compromiso ambiental sobre la adherencia vegetariana con el fin de favorecer el bienestar individual y colectivo. En la presente tesis, el concepto del bienestar colectivo se emplea para englobar el bienestar ecológico, el bienestar animal y la prosperidad de la sociedad y las generaciones futuras. Más concretamente, primero estudiamos la relación entre el compromiso vegetariano, evaluando la relación de la identidad vegetariana y personas que siguen una dieta con una alta escala vegetariana, con sus niveles del bienestar subjetivo - interpretado como satisfacción con la vida, bienestar emocional y vitalidad subjetiva - y comparamos los resultados con el estado de los omnívoros. En segundo lugar, examinamos el papel que desempeña la conexión con la naturaleza en la relación anterior entre el compromiso vegetariano y el bienestar subjetivo. Y finalmente, analizamos la influencia del comportamiento pro-ambiental sobre la adherencia vegetariana a corto y largo plazo (consistencia y continuidad con la dieta reducida en carne) de personas con un consumo de carne reducido en relación con la conexión con la naturaleza y la orientación política, para así

poder identificar los factores que fomenten la adherencia vegetariana a lo largo del tiempo.

La principal innovación de esta tesis a la literatura científica radica en que estudiamos el vegetarianismo, diferenciando la identidad vegetariana (factor psicológico) de la escala vegetariana (comportamiento actual) en relación con las tres dimensiones del bienestar subjetivo (satisfacción con la vida, bienestar emocional y vitalidad subjetiva) explorando así los aspectos cognitivos, hedónicos y eudaimónicos del bienestar, en una muestra de estudiantes universitarios en España. También, según nuestro conocimiento, es la primera vez que se ha empleado en la literatura la conexión con la naturaleza como un medio para comprender mejor la relación entre el bienestar subjetivo y el vegetarianismo, así como el compromiso pro-ambiental como predictor de la adherencia vegetariana.

A continuación, resumimos los antecedentes más relevantes que dieron origen al desarrollo de la presente tesis y al planteamiento de las hipótesis correspondientes. Empezando por la definición del vegetarianismo, destacamos que es una materia con un alto componente multifacético, dada su naturaleza dinámica que abarca perspectivas políticas, éticas, sociales, ambientales y humanas. Sin embargo, el vegetarianismo se puede comprender como una transición dietética que contribuye a construir sociedades más saludables, conscientes y evolucionadas, a través de la reducción del consumo de animales, priorizando alimentos frescos a base de plantas convirtiéndose en una forma de vida (Lea, Crawford & Worsley, 2006; Shapiro, 2015; Nezelek, Forestell & Newman, 2018).

Desde la perspectiva ambiental, el vegetarianismo contribuye con el mantenimiento óptimo de la salud planetaria, gracias a una dieta baja en productos de origen animal, y ofrece una dieta sostenible capaz de reducir la contaminación de agua y suelos, así como frenar la pérdida de la biodiversidad y contribuir hacia otros desafíos asociados con los sistemas de producción masivos de alimentos basados en carne y su creciente demanda (Pimentel & Pimentel, 2003; Hallström, Rööös & Börjesson, 2014; Álvaro, 2017). Además, a nivel individual, encontramos diversas fuentes que afirman que una dieta vegetariana equilibrada es beneficiosa para la salud humana durante todas las etapas de vida, aportando una mayor vitalidad y reduciendo la mortalidad (Janda &

Trocchia, 2001; Nobis, 2008; Álvaro, 2017). A nivel social, el vegetarianismo influye positivamente sobre los derechos de los animales, el bienestar y la reducción del hambre en el mundo (Kalof et al., 1999) y también contribuye a reducir los gastos relacionados con la salud pública, debido a una dieta más saludable y sostenible (Maurer, 2010; Springmann et al., 2016).

Desde la perspectiva ético-política, el vegetarianismo desafía la ideología alimentaria dominante, creando un vehículo de emancipación social y cultural (Jabs, Sobal & Devine, 2000; Morris & Kirwan, 2006). También, el ciudadano-consumidor vegetariano ejerce una fuerza capaz de crear un cambio social mediante la compra ética de alimentos y boicot incrementando su responsabilidad colectiva (Micheletti, 2003; Johnston, 2008). De esta forma, el consumidor responsable participa en la creación de procesos de producción más justos y sociedades más sostenibles para aliviar cuestiones de crecimiento económico desigual, desafío ambiental e injusticia social global (Guthman, 2003; Sassatelli & Davolio, 2010; Johnston, Szabo & Rodney, 2011; Ghvanidze et al., 2016). Por lo tanto, en lo que respecta al bienestar colectivo, el vegetarianismo desempeña un papel positivo importante en una mejor gestión de nuestros recursos naturales y sociales.

Sin embargo, el compromiso vegetariano conlleva que las personas transformen gradualmente su identidad personal. Es decir, una persona vegetariana adopta un nuevo sistema de creencias, apoyado en unas motivaciones éticas que alientan a percibir el mundo de una forma más reflexiva, y se distancia de la cultura dominante (Twigg 1979; Beardsworth & Keil, 1992; Rosenfeld & Burrow, 2017a). En consecuencia, a pesar de que los vegetarianos generalmente posean un mayor bienestar físico y compromiso pro-colectivo, éstos tienden a experimentar estados emocionales distantes de la felicidad (Baines, Powers & Brown, 2007; Michalak, Zhang & Jacobi, 2012; MacInnis & Hodson, 2017; Forestell & Nezlek, 2018), lo cual hace que el vínculo con el bienestar subjetivo se vuelva más complejo.

Por un lado, la relación entre el vegetarianismo y la salud física es positiva cuando se sigue una dieta equilibrada, conduciendo a mayores niveles de salud, longevidad y reducción de enfermedades. No obstante, cuando el vegetarianismo es consecuencia de un trastorno alimentario, la asociación con el bienestar físico y psicológico se convierte

en negativa (Worsley & Skrzypiec, 1997; Lindeman & Stark, 1999; Lindeman, 2002; Timko, Hormes & Chubski, 2012; Zuromski et al., 2015). Cuando estudiamos el vegetarianismo como una dieta saludable en relación con el bienestar subjetivo, ésta tiende a ser positiva (Weinstein & Anton, 1982; Blanchflower, Oswald & Stewart-Brown, 2013; Agarwal et al., 2015; Mujcic & Oswald, 2016; Conner et al., 2017; Jain et al. 2020).. Sin embargo, encontramos la tendencia contraria cuando abordamos el vegetarianismo desde la perspectiva de la identidad vegetariana internalizada. Aquí encontramos evidencia que sugiere que ser vegetariano conduce a niveles reducidos del bienestar subjetivo (Baines, Powers & Brown, 2007; Michalak, Zhang & Jacobi, 2012; MacInnis & Hodson, 2017; Forestell & Nezlek, 2018; Lavallee et al., 2019) con una minoría de casos de evidencia positiva (Link, Hussaini & Jacobson, 2008; Beezhold & Johnston, 2012).

Teniendo en cuenta los múltiples beneficios del vegetarianismo sobre el bienestar colectivo, creemos que es importante analizar con más profundidad la compleja relación del vegetarianismo con el bienestar subjetivo, lo que constituye la base para la presente investigación. Por lo tanto, abordamos la problemática desde la perspectiva de la relación con el entorno exterior y otros seres vivos, dado que la evidencia anterior sugiere correlaciones positivas entre las personas relacionadas con la naturaleza y los estilos de vida vegetarianos, que son más compasivos y respetuosos con el planeta (Twigg 1976; Beardsworth & Keil , 1992; Fox, 2000; Fox & Ward, 2008) y señala posibles vías para elevar los niveles del bienestar subjetivo (Ericson et al., 2014). Además, el vegetarianismo puede servir como un medio para encontrar el propósito de vida o incluso lograr un objetivo más grande para las personas que estén relacionadas con la naturaleza (Nisbet, Zelenski & Murphy, 2011; Rosenfeld & Burrow, 2017b). Considerando la influencia positiva de la conexión con la naturaleza para el bienestar individual y colectivo, aplicamos este enfoque para comprender mejor la felicidad vegetariana.

Pero de nada nos serviría promover la dieta vegetariana por su alto componente pro-ambiental y saludable si las personas no se comprometen a reducir su consumo de carne de forma consistente y duradera. Es más, la mayoría de los vegetarianos confiesan haber comido carne desde que adoptaron este estilo de vida. Reconocemos ciertas lagunas en la literatura sobre la adherencia vegetariana, donde identificarse con la identidad

vegetariana no garantiza la reducción real del consumo de carne, y encontramos que una adherencia vegetariana baja pone en peligro la sostenibilidad propuesta por el vegetarianismo (Ruby, 2012; Rosenfeld & Tomiyama, 2020). En consecuencia, consideramos de vital importancia analizar factores distintos de la identidad vegetariana que promuevan la consistencia a corto plazo y la continuidad a largo plazo con las dietas reducidas en carne. Nuestra atención aquí se dirige en estudiar la relación desde la perspectiva del compromiso ambiental, puesto que los vegetarianos tienden a relacionarse mejor con el medio ambiente que otras identidades. En este sentido, resaltamos que la adherencia a la dieta vegetariana es esencial para un bienestar colectivo duradero porque sin un consumo reducido de carne real, todas las premisas ecológicas del vegetarianismo se convierten en creencias teóricas que no se traducen en estrategias efectivas para preservar el planeta.

En este caso, no solamente nos enfrentamos a un bienestar colectivo amenazado, sino también a la percepción negativa de los omnívoros hacia los vegetarianos que se podría intensificar aún más a causa de una débil adherencia vegetariana (Rosenfeld & Burrow, 2017a) y disminuir la intención de las personas de continuar con una dieta sostenible. Además se podría incrementar la disonancia cognitiva si existe un conflicto entre la identidad personal y el comportamiento real a favor del consumo de carne (Bastian & Loughnan, 2017) a pesar de su devastador impacto en el medio ambiente, otros seres vivos y la salud humana. Por lo tanto, otro de nuestros objetivos es examinar la influencia del comportamiento pro-ambiental para concebir mejor la adherencia a la dieta vegetariana y, posiblemente, proporcionar un planteamiento simplificado para apoyar esta dieta sostenible y contribuir al bienestar individual y colectivo desde un enfoque ecológico.

Desde nuestra perspectiva, el aspecto más importante dentro la investigación sobre el bienestar podría plasmarse en su interconexión con los aspectos individuales y colectivos donde los individuos puedan construir y seguir un modelo sólido hacia el logro de mayores niveles de felicidad individual y ayudar simultáneamente al bienestar ecológico y social (Ryan & Deci, 2001). Por lo tanto, en la presente tesis investigamos el aspecto del vegetarianismo en relación con el bienestar subjetivo, la conexión con la naturaleza, el comportamiento pro-ambiental y la adherencia vegetariana desde la perspectiva de los vegetarianos en España, con el fin de enriquecer el conocimiento

actual sobre el vegetarianismo e identificar herramientas más efectivas para políticas públicas ambientales. Con ello respaldaríamos simultáneamente los Objetivos de Desarrollo Sostenible diseñados por Las Naciones Unidas para contrarrestar los desafíos más imperativos de nuestra sociedad actual dentro del alcance del bienestar humano, la degradación ambiental, el clima, el hambre en el mundo, la desigualdad, la paz y la justicia (The United Nations, 2020).

Además, es importante abordar las principales motivaciones que posee la autora para presentar esta tesis. Personalmente, como vegetariana y como persona conectada con la naturaleza, creo que este camino hacia un bienestar común puede proporcionar a la humanidad y al medio ambiente con nuevos recursos para crear estilos de vida prósperos para las generaciones presentes y venideras. El elemento clave que fundamenta mi decisión, no solo de adoptar, sino también de continuar como vegetariana, es la voluntad de proteger la integridad de nuestro bienestar individual y colectivo al experimentar el vegetarianismo como un movimiento, una forma de vida y una cultura más consciente. De esta forma podemos generar un impacto directo en la conciencia ecológica humana que se transfiere a otros patrones del consumo de la sociedad actual que habita mayormente en espacios urbanos. A la luz de estas razones, he construido la base motivadora de esta tesis doctoral y contribuido a difundir la conciencia sobre el paradigma vegetariano entre las esferas académicas.

En base a los objetivos establecidos así como a los antecedentes que fundamentan esta investigación, formulamos las siguientes hipótesis. Primero, esperamos una relación negativa entre el compromiso vegetariano, medido como identidad y escala vegetarianas, y el bienestar subjetivo que variaría según el indicador de felicidad bajo consideración. Segundo, estimamos que la conexión con la naturaleza modera la relación entre el vegetarianismo y el bienestar subjetivo. Y tercero, planteamos que el comportamiento pro-ambiental predice la adherencia vegetariana, medida en la consistencia actual y la intención futura de continuar con una dieta reducida en carne. Además, presumimos que el comportamiento pro-ambiental media la relación de la adherencia vegetariana con la conexión con la naturaleza y la orientación política.

En cuanto a la metodología aplicada en la presente tesis, trabajamos sobre una base de datos nueva compuesta por 1068 estudiantes de distintas modalidades de grado en la

Universidad de Granada que completaron un cuestionario online en el segundo trimestre de 2019. Para contrastar las hipótesis 1 y 2 analizamos la muestra global mientras que para la hipótesis 3 trabajamos con la muestra seleccionando solamente los perfiles de flexitarianos y vegetarianos (en total 227 participantes). En los análisis de la estadística descriptiva empleamos el coeficiente de Pearson para comprobar la homogeneidad de nuestros datos en respecto a la media. En lo que se refiere a la relación entre el vegetarianismo, la conexión con la naturaleza y el bienestar subjetivo (las hipótesis 1 y 2) realizamos un análisis de regresión lineal utilizando el método de mínimos cuadrados ordinarios y especificamos un modelo diferente escalonado para cada dimensión del bienestar. El análisis de los datos se realizó con el software estadístico Stata15.

Para testear la hipótesis 3, analizamos los predictores de la intención de continuar con una dieta reducida en carne en un futuro cercano (1-2 años) y la consistencia con la dieta en los últimos tres días previos a la encuesta. Para ello realizamos una regresión logística jerárquica y una regresión de mínimos cuadrados ordinarios, respectivamente, controlando la identidad alimentaria de los perfiles flexitarianos versus vegetarianos. Además de los modelos de regresión, llevamos a cabo unos análisis de mediación para identificar si el comportamiento pro-ambiental actúa como un agente mediador de la relación entre la conexión con la naturaleza y/u orientación política con la adherencia vegetariana. El análisis de datos se realizó con el software estadístico R.

A continuación resumimos los resultados de mayor relevancia obtenidos de nuestras estimaciones. La hipótesis 1 puede aceptarse para la dimensión de la satisfacción con la vida teniendo en cuenta la escala vegetariana y la identidad de los flexitarianos. En cuanto al bienestar emocional, la hipótesis 1 también es cierta para la identidad de los lacto-pesco vegetarianos. Sin embargo, nuestros hallazgos demuestran que los veganos no experimentan niveles reducidos del bienestar cognitivo o emocional, lo que va en contra de nuestra hipótesis. Además, encontramos que los veganos son más vitales que otras identidades, lo que complementa trabajos previos (Conner et al., 2017).

Con respecto a la identidad vegetariana, nuestros resultados apoyan trabajos anteriores que detectaron diferencias en la evidencia asignando resultados tanto positivos como negativos en el vínculo entre el vegetarianismo y el bienestar subjetivo (Beezhold &

Johnston, 2012; Forestell & Nezlek, 2018; Lavallee et al. , 2019). Dado que la hipótesis 1 no se pudo aceptar para todas las identidades vegetarianas, nuestros resultados confirman la necesidad de seguir las sugerencias de previos trabajos para analizar los resultados entre veganos, flexitarianos y omnívoros por separado (Timko, Hormes & Chubski, 2012; Rosenfeld 2018).

Para contrastar la hipótesis 2 abordamos el efecto combinado del vegetarianismo y la conexión con la naturaleza a través de las interacciones. Los resultados demuestran que las personas altamente conectadas con la naturaleza y siguiendo una dieta con alta escala vegetariana experimentan una vitalidad subjetiva más fuerte. Además, nuestros hallazgos sugieren que la identidad vegana obtiene un mayor bienestar subjetivo en sus facetas de la satisfacción con la vida y la vitalidad subjetiva cuando se establezca una fuerte conexión con la naturaleza. La identidad de los lacto-pesco vegetarianos, que en la hipótesis 1 estaba asociada con un menor bienestar emocional, experimenta en las nuevas estimaciones un mayor bienestar afectivo si se relaciona fuertemente con la naturaleza. Los modelos indican que un mayor nivel de conexión con la naturaleza es aproximadamente 4 sobre una escala del 1 al 5, pero en el caso de los lacto-pesco vegetarianos, el nivel de conexión con la naturaleza debe ser muy elevado (las estimaciones indican 4.9).

En lo que respecta la hipótesis 3, nuestro estudio reveló tres hallazgos fundamentales. Primero, el comportamiento pro-ambiental predice positivamente la adherencia vegetariana, tanto en términos de la consistencia a corto plazo como de la intención a largo plazo para continuar con la adherencia a la dieta reducida en carne. En segundo lugar, el comportamiento pro-ambiental media el vínculo entre la conexión con la naturaleza y la adherencia vegetariana, explicando por qué las personas que se sienten más conectadas con la naturaleza se comprometen más fuerte con la dieta reducida en carne y tienen mayor probabilidad de querer continuar con esta dieta en el futuro cercano (mediación completa). Tercero, el comportamiento pro-ambiental también media el vínculo entre la orientación política y la adherencia vegetariana, explicando por qué las personas más de izquierdas se adhieren de forma más comprometida con una dieta reducida en carne (mediación parcial) que las personas más de las derechas, y también tienen más probabilidad de continuar con su dieta reducida en carne en el futuro cercano (mediación completa).

Por lo tanto, hemos hallado que el comportamiento pro-ambiental es un predictor único de la adherencia vegetariana en sus ambas facetas, por encima de los efectos de la motivación, conveniencia y aspectos demográficos, lo que nos proporciona implicaciones prometedoras sobre cómo promover el compromiso de las personas con las dietas vegetarianas con un mayor éxito. Nuestros datos sugieren que una estrategia efectiva para promover que las personas se adhieran a las dietas vegetarianas es hacerles valorar y participar en comportamiento pro-ambiental más en general, es decir, apreciar y realizar actividades que beneficien la salud global del planeta. Una implicación interesante de este resultado es que no necesitamos motivar a las personas explícitamente a seguir una dieta vegetariana para aumentar su adherencia vegetariana.

Nuestros resultados tienen una interpretación política directa. En primer lugar, la difusión que el vegetarianismo es beneficioso para el medio ambiente debería ir acompañada de acciones que al mismo tiempo aumenten la conexión de las personas con la naturaleza para experimentar un mayor bienestar subjetivo. Esto está respaldado por la evidencia que sugiere que al adoptar estilos de vida más conectados con la naturaleza, uno puede alcanzar un mayor sentido en la vida (Michalak et al. 2012; Forestell & Nezlek 2018). En consecuencia, las culturas más conscientes pueden fomentar el bienestar de las personas y la satisfacción con la vida (Dhandra, 2019), lo que hemos comprobado desde la perspectiva vegetariana. En segundo lugar, nuestros hallazgos simplifican las intervenciones políticas que buscan promover estilos de vida sostenibles que además pueden enriquecer a las personas vegetarianas con mayores niveles de bienestar subjetivo.

Asimismo, dentro de las diversas interpretaciones políticas, mencionamos por último la difusión de una cultura orientada hacia la naturaleza donde la conexión con el hábitat natural fomenta en algunos casos el bienestar subjetivo vegetariano, y un mayor compromiso pro-ambiental fortalece la adherencia vegetariana mejorando así el bienestar colectivo a largo plazo. Esto podría resultar de interés especialmente en áreas urbanas donde la experiencia de conexión individual con la naturaleza es reducida, lo que ejerce una influencia negativa tanto en el bienestar individual como colectivo (Nisbet, Zelenski & Murphy, 2011). Por lo tanto, a través del vegetarianismo y su interconexión implícita con el entorno natural (Fox, 2000), podríamos apoyar actividades sostenibles en ciudades como la jardinería ecológica y crear nuevos espacios

para la participación de comunidades locales mejorando la cooperación a nivel social y ambiental así como la consistencia con la dieta vegetariana en el tiempo.

En conclusión, el vegetarianismo constituye no solo una dieta, sino también una forma de vida y un movimiento social actualmente en expansión en todo el mundo. En la presente investigación hemos identificado que el vínculo de la felicidad vegetariana es un asunto complejo por sus matices interconectados con los factores personales, sociales y relacionales (objetivo 1). Descubrimos que la experiencia de una mayor conexión con la naturaleza puede proporcionar una posible compensación por los niveles disminuidos de bienestar subjetivo en perfiles vegetarianos específicos (objetivo 2). Además, al promover el comportamiento pro-ambiental, la preocupación por el bienestar animal y la conveniencia de preparar platos vegetarianos, podríamos fortalecer la adherencia vegetariana a corto y largo plazo, así como la solidez en la autonomía que son necesarias para un compromiso exitoso con el vegetarianismo (objetivo 3).

Creemos que nuestros nuevos hallazgos en el campo del vegetarianismo, la felicidad y la adherencia a la dieta vegetariana pueden constituir la base para futuras investigaciones sobre el tema del vegetarianismo, examinando no solo la influencia de la identidad reflexiva de los vegetarianos, sino también su conciencia de la relación que tengan con la naturaleza que, a su vez, puede apoyar una implementación más efectiva de políticas públicas para la preservación ambiental y gestión del bienestar general. Al hacer que las personas se sientan más conectadas con la naturaleza, pueden aumentar sus niveles de bienestar subjetivo, que también interactúa positivamente con la capacidad de algunos perfiles vegetarianos de experimentar felicidad. Además, sentirse más conectado con la naturaleza refuerza la participación de las personas en el comportamiento pro-ambiental, que a su vez incrementa la adherencia vegetariana. Este resultado está respaldado con la postura expuesta en esta tesis, en la que sugerimos que el vegetarianismo puede interrelacionarse positivamente con el bienestar individual y colectivo y que además el vínculo puede mantenerse desde una perspectiva a largo plazo. Por lo tanto, consideramos que este descubrimiento constituye un potencial atractivo para explorar más a fondo en múltiples dimensiones de nuestras actividades humanas.

1. Introduction

1.1 Background

Vegetarianism has become an important field of study for its proximity relation with well-being of the society and the environment. Consequently, in this dissertation we hone in on several aspects of interconnectedness of vegetarianism: its relationship with subjective well-being, the role that nature connectedness plays on the previous link, and the influence of environmental commitment on vegetarian adherence in order to foster long-term individual and collective well-being. By collective well-being we refer to a unifying concept for ecological wellness, animal welfare, and prosperity of society and future generations, which is further developed in the literature review.

This background section aims to introduce some of the important aspects of vegetarianism and its relationship with individual and collective well-being and it is structured into five parts. First, we present the concept of vegetarianism. Second, we specify sources that endorse assets of vegetarianism on individual and collective well-being. Third, we introduce existing tendency in the evidence relating vegetarianism to reduced subjective well-being. Fourth, we conceptualize vegetarian adherence, as short-term consistency and long-term intention to continue a meat-reduced diet, an aspect that is relevant for an adequate framing of public environmental policies in order to build solid sustainable societies. All those aspects are dealt in the present dissertation with greater detail and bibliography. And finally, we highlight the urgency to approach the challenges of our current society through Sustainable Development Goals designed by The United Nations as well as we refer to the personal motivations that have lead the author to elaborate this work.

Vegetarianism can be defined from a multifaceted level due to its dynamic nature, yet a common understanding of vegetarianism strongly relates to reduced levels of meat and dairy intake prioritizing fresh plant foods. In this line, facets of vegetarianism not only enclose an improved diet or lifestyle, but they also refer to the transformational identity process and a whole movement embracing political, ethical, social, environmental, and human perspectives. As a result, vegetarianism remains hitherto an open concept that relates to an expanding control over animal consumption (Lea, Crawford & Worsley,

2006; Nezelek, Forestell & Newman, 2018). Therefore, in our work we identify the role of vegetarianism as a dietary transition that contributes to building healthier, more conscious, and evolved societies (Lea, Crawford & Worsley, 2006). This transformational journey of vegetarianism constitutes an evolutionary process towards a dietary behaviour with intrinsic identity shifts and extrinsic individual and collective benefits (Devine, 2005) and thus leads to adopt vegetarianism as way of life (Shapiro, 2015).

From an environmental perspective, a wide evidence suggests that vegetarianism is the source to numerous gains for optimal maintenance of planetary health via a diet low in animal-based products offering a feasible solution to sustainable diet able to moderate current challenges of our food systems focused on the growing demand of omnivores (Pimentel & Pimentel, 2003; Hallström, Rööös & Börjesson, 2014; Alvaro, 2017). From a human health perspective, diverse sources propose vegetarian diet to embody a robust baseline for an optimal personal health management during all lifespan guaranteeing thus increased vitality and life expectancy (Janda & Trocchia, 2001; Nobis, 2008; Alvaro, 2017). From a social transformation standpoint, vegetarianism encloses concerns related to animal rights, welfare, and relief to world's hunger (Kalof, et al., 1999), it also refers to socially sustainable form of consumption for its increased savings on healthcare expenses associated with the improved diet (Morris & Kirwan, 2006; Maurer, 2010; Springmann et al., 2016).

In addition, since vegetarians do not follow the mainstream dietary and moral patterns of the society, they challenge the dominant food ideology becoming hence a vehicle for social and cultural emancipation (Jabs, Sobal & Devine, 2000; Morris & Kirwan, 2006). From an ethical-political perspective, vegetarianism as a means of ethical food shopping and boycott grants the citizen-consumer with a force capable to create a progressive social change by individualized collective action demanding collective responsibility (Micheletti, 2003; Johnston, 2008) on issues of uneven economic growth, environmental challenge, and global welfare justice contributing to fairer production processes (Guthman, 2003; Sassatelli & Davolio, 2010) and more sustainable societies (Johnston, Szabo & Rodney, 2011; Ghvanidze et al., 2016). Therefore, as regards collective well-being, vegetarianism plays a significant positive role on better management of our natural and social resources.

Since vegetarian commitment leads to a gradual transformation of personal identity, a vegetarian person not only differs from the mainstream culture but also relies on a belief system supported by ethical motivations that encourage individuals to perceive the world in a more reflexive way (Twigg 1979; Beardsworth & Keil, 1992; Rosenfeld & Burrow, 2017a). In consequence, despite the existence of increased physical wellness and pro-collective behaviour engagement among vegetarians, these tend to experience emotional states distant from happiness (Lindeman, 2000; Baines, Powers & Brown, 2007; Michalak, Zhang & Jacobi, 2012; MacInnis & Hodson, 2017; Forestell & Nezelek, 2018) and the link with subjective well-being becomes more complex.

In the light of findings on the relation between vegetarianism and individual well-being, we allocate two research lines, health and subjective well-being. Therefore, in our work we analyze vegetarian commitment separately, accounting for self-assessment vegetarian scale that links to the dietary pattern and vegetarian identity that relates to the psychological aspects of vegetarianism. Analysing vegetarianism and health, as we have already introduced, there is a positive correlation due to a balanced vegetarian diet that leads to increased levels in health, longevity, and disease reduction. However, if vegetarianism is adopted as an eating disorder, the association with physical and psychological well-being is negative (Worsley & Skrzypiec, 1997; Lindeman & Stark, 1999; Lindeman, 2002; Timko, Hormes & Chubski, 2012; Zuromski et al., 2015).

Studying the compound of vegetarianism and subjective well-being, we find that if vegetarianism is adopted as a healthy diet, the tendency with subjective well-being is positive (Weinstein & Anton, 1982; Weng et al., 2012; Blanchflower, Oswald & Stewart-Brown, 2013; Agarwal et al., 2015; Mujcic & Oswald, 2016; Conner et al., 2017; Jain et al. 2020). However, stronger differences in the evidence arise when we approach vegetarianism from the perspective of internalized personal vegetarian identity. In this bunch of research we identify sources that confirm a negative tendency between being vegetarian and subjective well-being (Baines, Powers & Brown, 2007; Michalak, Zhang & Jacobi, 2012; MacInnis & Hodson, 2017; Forestell & Nezelek, 2018; Lavallee et al., 2019) with minority of cases for positive evidence (Link, Hussaini & Jacobson, 2008; Beezhold & Johnston, 2012).

Given the higher complexity in vegetarianism-subjective well-being relationship, we

believe this matter demands a deeper understanding, which is the main topic of the present dissertation. Therefore, we approach the link from the angle of relatedness to the outer environment and other living beings since wide evidence suggests positive correlations between people who are related to nature and vegetarian compassionate lifestyles reducing thus their footprint on the planet (Twigg 1976; Beardsworth & Keil, 1992; Fox, 2000; Fox & Ward, 2008) and fostering their levels of subjective well-being (Ericson et al., 2014).

Consequently, we examine the happiness challenge of vegetarian identity from a novel perspective that considers the influence of nature connectedness that is positive both on individual and collective well-being. People try to build identities that enhance their self-esteem and reflect personal attitudes, knowledge, and socio-demographic conditions (Bisogni et al., 2002). Some authors suggest that vegetarian diet becomes a vehicle for achieving a bigger goal in life (Rosenfeld & Burrow, 2017b). This is supported by further findings, which confirm that nature related individuals employ vegetarianism as a catalyst that encourages a sense of purpose in life and a higher self-acceptance (Nisbet, Zelenski & Murphy, 2011).

We also acknowledge certain gaps in literature on vegetarian adherence since self-identification as a vegetarian does not guarantee actual meat avoidance. This consequently jeopardizes the proposed sustainability of vegetarianism caused by frequent violation of the vegetarian diet (Ruby, 2012; Rosenfeld & Tomiyama, 2020). For that purpose, we find of vital importance to analyse the predicting factors for vegetarian adherence that promote short-term consistency and long-term continuity of meat-reduced diets from an environmental commitment perspective since vegetarians tend to relate stronger with the environment than other food identities. In fact, the adherence to the vegetarian diet is essential for a lasting collective well-being because without a committed avoidance of flesh all ecological premises of vegetarianism fall into pitfall of theoretical beliefs than do not translate into effective strategies to preserve the planet.

In addition, weak consistence with vegetarian diet may increase further negative perception of omnivores towards vegetarians (Rosenfeld & Burrow, 2017a) and can also amplify cognitive dissonance in favour of meat consumption (Bastian & Loughnan, 2017) despite its devastating impact on the environment, other living beings, and human

health as well as diminish people's intention to continue with the sustainable diet. Therefore, our aim is to consider the influence of pro-environmental behaviour to better understand the vegetarian adherence and possibly provide a simplified approach for supporting this sustainable diet and contribute to individual and collective well-being from an ecological relatedness perspective.

In this line, perhaps the most important aspect of the research on well-being might be its interconnectedness with individual and collective facets where individuals can build and follow a solid journey towards achievement of increased levels of individual happiness and simultaneously contribute to ecological and social well-being (Ryan & Deci, 2001). Therefore, we articulate the compound of vegetarianism in relation to subjective well-being, connectedness to nature, pro-environmental behaviour, and vegetarian adherence in order to fill the existing gap in the vegetarian literature from the perspective of Spanish vegetarians so as to increase current knowledge on vegetarianism and frame more effective tools for happier public pro-environmental policies (Beardsworth & Keil, 1992; Fox, 2000; Fox & Ward, 2008; Nisbet, Zelenski & Murphy, 2009, Schenk et al., 2018; Rosenfeld, 2019).

The United Nations established a blueprint for shaping a better future for current and next generations. Yet in order to reach such an ambitious goal, this organization has designed specific Sustainable Development Goals to accomplish by 2030 (The United Nations, 2020). This time schedule leaves us no doubt that there is an urgency element in the need of bringing strategic awareness among concrete targets of individuals to attain the main goal of life continuity on the planet. The Sustainable Development Goals aim to counteract the most imperative challenges of our current society within the outreach of human well-being, environmental degradation, climate, world hunger, inequality, peace, and justice.

Also, it is important to address to the main motivations that the author holds in order to present this dissertation. Personally, as a vegetarian and a person connected to nature, I believe that this interconnected path towards a common well-being can provide humanity and environment with new resources for prosperous forms of life for present and future generations. Therefore, my decision not only to become but also to continue as a vegetarian is to protect the integrity of our individual and collective well-being by adopting vegetarianism as a movement, as a way of life, and as a more conscious

culture that performs a direct impact on human ecological awareness and behaves as a transferable element among other consumption patterns of our current society dwelling mostly in the urban habitat. In the light of these reasons, I have constituted the motivational foundation to elaborate this dissertation and contribute thus to spread the awareness on vegetarian paradigm among academic spheres.

1.2 Aims of study

The main goal of the present research is to study some of the individual and collective aspects of the interconnected relationship between vegetarianism and well-being as well as vegetarian adherence. For that purpose, we evaluate the link on vegetarian commitment, subjective well-being, nature relatedness, pro-environmental behaviour, and vegetarian intentional attitude to continue with the vegetarian diet consistently analysing a students' sample from the University of Granada, in Andalusia (Spain) taken on the second quarter of 2019.

The specific aims of this dissertation are:

- Objective 1: to study the existing relationship of vegetarian commitment, assessed as individuals who self-identify as vegetarians and persons who follow a diet with high vegetarian scale, with their levels of subjective well-being, measured in life satisfaction, emotional well-being, and subjective vitality, and compare the results with the status of their omnivore counterparts.
- Objective 2: to examine the role that connectedness to nature plays on the previous relationship between vegetarian commitment, assessed as vegetarian identity and scale, and subjective well-being, conceptualized in its three measures.
- Objective 3: to analyse the influence of pro-environmental behaviour on vegetarian short and long-term adherence (consistency and continuity with the meat-reduced diet) in relation to meat-reducers' connectedness to nature and political orientation in order to identify factors promoting vegetarian dietary adherence over time.

Our research is unique in that we analyse vegetarianism, separating self-described vegetarian identity from self-assessed vegetarian scale in relation to three dimensions of subjective well-being (life satisfaction, emotional well-being, and subjective vitality) exploring thus cognitive, hedonic, and eudaimonic aspects of well-being in a sample of university students in Spain. Also, to our knowledge, it is the first time in the literature that connection to nature has been employed as a means through which to better

understand the subjective well-being - vegetarianism relationship as well as pro-environmental commitment as a predictor for vegetarian adherence conceptualized in its short and long-term facets of consistency and continuity with the meat-reduced diet, respectively.

1.3 Structure

This dissertation work is structured into six chapters, followed by references and annexes. The present chapter is destined to the general overview of the background related to vegetarianism, well-being, and vegetarian adherence and how these aspects relate with the aims of our study. Next, we specify the study's aims that constitute the pillar to our research and enclose the perspective of pro-environmental awareness on vegetarian happiness and adherence. Then, we continue with the structural design of this research resuming the most relevant contributions of each chapter.

In chapter 2 we review the current evidence on vegetarianism and its multidimensional aspects, with attention to the dynamic concept and evolution of vegetarianism, vegetarian motivations, motivational taxonomy models, symbolism of meat, vegetarian identity development, and aspects that condition successful transition towards vegetarianism. Section 2.3 is particularly relevant since it constitutes the theoretical foundation to our empirical work of aims 1 and 2 by relating vegetarianism to individual and collective well-being as well as its interconnectedness. In section 2.4 we study the vegetarian adherence in its both dimensions of consistency and continuity, and thus provide the basis for developing of our aim 3.

In chapter 3 we define the fieldwork of our work that constitutes a new database comprising 1068 participants of different areas of study at the University of Granada in Spain. We work with two samples, the main sample enclosing all food identities, and the subsample with meat-reducers only, comprising 227 participants. We specify the dependent and independent variables for the objectives of this dissertation and establish three hypotheses that respectively link to each specific objective in the study. First, we theorize that vegetarians would experience lower subjective well-being. Second, we estimate that nature connectedness would moderate the previous relation. And third, we

hypothesize that pro-environmental behaviour would predict and moderate vegetarian adherence in regards to nature connectedness and political orientation. Next, we detail statistical methods applied for the analyses, which are ordinary least squares regressions for hypothesis 1 and 2, and hierarchical logistic and ordinary least squares regressions for hypothesis 3. In addition, we conducted mediatory analyses to further test hypothesis 3.

In chapter 4 we present descriptive statistics and results estimations, providing detailed graphic and numeric information of our findings. The results from descriptive statistics analyse and relate different dimensions of subjective well-being, environmental commitment, political orientation, vegetarian adherence, and control variables. Section 4.2 introduces information related to the regressions' estimations separating the compound of vegetarianism, subjective well-being, and connectedness to nature from the compound of vegetarian adherence, environmental commitment, and political orientation.

In chapter 5 we proceed to discuss our findings; first, from a general standpoint, second, we report per each line of established hypotheses, and finally, we suggest policy recommendations, future research directions, as well as we refer to the allocated limitations in our study. Finally, in chapter 6 we conclude our main findings obtained from our statistical estimations and highlight the novel contribution to the field of study under consideration that entails vegetarianism and its relationship with individual and collective well-being as well as its perspective for short and long-term dietary adherence. The following pages are destined to the references employed in this dissertation work and complementary annexes related to further technical details enhancing robustness of our analyses.

2. Literature review

In the following pages we examine vegetarianism from its multifaceted as well as interrelated aspects that constitute the theoretical background of our work. This section is divided into four subsections. First, we refer to *concept and evolution of vegetarianism* (2.1) identifying concept of vegetarianism (2.1.1) followed by its origins and evolution (2.1.2). Second, we proceed to study *vegetarian motivations and identity* (2.2) describing general motivations for vegetarianism (2.2.1), motivational taxonomy models (2.2.2), vegetarian identity in Western cultures (2.2.3), ideologies and symbolism of meat (2.2.4), and we also study successful social change towards vegetarianism (2.2.5). Third, we analyse the relation of *vegetarianism and well-being* (2.3) distinguishing between individual (2.3.1), collective (2.3.2) and inter-connected (2.3.3) well-being. Finally, we hone in on *vegetarian adherence* (2.4) in relation to environmental commitment and purpose in life (2.4.1), and we analyse vegetarian continuity in the near future (2.4.2) and consistency with meat-reduced diets (2.4.3).

2.1 Concept and evolution of vegetarianism

In this chapter, first we introduce vegetarianism as a dynamic open concept in progress embracing a wide range of perspectives related to its environmental, social, ethical, and political implications. We believe that through the means of its extensive relational outreach, we are able to convey a better comprehension of what vegetarianism is in addition to its definition facets and taxonomies. Second, we introduce the most important hits of vegetarian history, its evolution, the foundation of the first vegetarian organization, the current spread of the vegetarian movement and the tendency of dietary well-being. We place our focus on the Western hemisphere and explore its socio-demographics, which permits us a deeper understanding of this new framing tool for a social progress. By these means we acknowledge the need for harmony between the individual, social, and natural environment, as reflected in the Hippocratic Oath (Kleisiaris, Sfakianakis & Papathanasiou, 2014).

Vegetarianism goes beyond the limits of dietary guidelines, since it becomes a way of being, and constitutes the starting point for identity development and its further

transformation (Shapiro, 2015). The difference between vegetarianism and a plant-based diet resides in that the latter includes mainly non-meat food, however in comparison to a strict vegetarian diet, a plant-based diet permits occasional meat intake (Schenk, Rössel & Scholz, 2018). Unlike vegetarianism, the plant-based dieting does permit occasional meat consumption whereas strict vegetarians tend to avoid animal products more seriously. Considering the rich evidence on vegetarianism and its multiple facets ranging from diet, lifestyle, and transformational identity process, to a whole movement embracing political, ethical, social, environmental, and human perspectives, we aim for the development of this thesis to differentiate the term of vegetarianism as a movement or a way of being (veganism in its strictest form) from the simplified term of plant-based food referring to a merely dietary pattern.

2.1.1 Concept of vegetarianism

2.1.1.1 General definition

Definition of the vegetarian diet still remains, hitherto, an open concept, as it is not strictly delimited as such. Literature related to vegetarianism bares certain discrepancies about people who identify themselves as vegetarians in spite of their meat and animal-derived products consumption (Ruby, 2012; Rothgerber, 2014; Rosenfeld & Burrow, 2017a). The term ‘vegetarian’ has been employed to describe a whole range of diets from the avoidance of red meat, the exclusion of meat, poultry, and fish to the total elimination of foods based on animal origin as is the case of veganism (Key, Appleby & Rosell, 2006; Baines, Powers & Brown, 2007). Indeed, confusion around the use of the term ‘vegetarian’ has presented challenges to quantify and study vegetarianism in empirical research (Weinsier, 2000).

In general terms, vegetarian diet is characterized by decreased levels of meat and dairy consumption in favour of fresh or minimally processed plant foods such as vegetables, fruits, grains, legumes, nuts, and seeds (Lea, Crawford & Worsley, 2006). The International Vegetarian Union (IVU) states in their definition that vegetarianism is a diet derived from plants with or without dairy products, eggs and/or honey (IVU, 2020). However, many vegetarians limit rather than completely exclude certain animal foods (Rothgerber, 2014).

The Vegetarian Society defined the term ‘vegetarian’ in the mid-nineteenth century from a broader perspective covering a range of dietary restrictive choices of foods with animal origins (Fox & Ward, 2008). Today it specifies the term ‘vegetarian’ as a diet that explicitly excludes all foods that have been made using processing aids from slaughter (The Vegetarian Society, 2020). Through the lens of a unifying perspective within Western cultures, vegetarianism may be understood as an eating pattern exercising an expanding control over animal product consumption (Lea, Crawford & Worsley, 2006; Nezelek, Forestell & Newman, 2018).

2.1.1.2 Vegetarianism as a process

In social research literature, we can also find evidence of the use of a unique term for vegetarianism and veganism abbreviated in the expression of ‘veg*anism’. It refers to both concepts, vegetarianism and veganism, and facilitates thus, a unified word for their common philosophy (Cole, 2008). Morris and Kirwan (2006) defined vegetarianism as a range of animal product consumption; expanding from least restrictive, where some meat is still consumed, to most restrictive, where only plant-based products are consumed, that is the case of veganism. Veg*anism becomes here a merging facet for the phraseology use, and it is understood as the process of reducing the intake of animal-based food.

On the other hand, Beardsworth and Keil (1991, 1992) explore vegetarianism as a spectrum of categories and find useful to measure vegetarianism as the progressive degree to which animal foods are avoided starting from red meat and poultry reduction, to total meat and fish avoidance until the gradual achievement of dairy products and eggs exclusion as is the case of the strictest form of vegetarianism. There are different taxonomies of vegetarianism, according to the process involved. The category model proposed by Beardsworth and Keil (1991, 1992) identifies six types of vegetarians from least to most restrictive level of meat intake.

- Type I: individuals who identify themselves as vegetarians but eat red meat or poultry occasionally.
- Type II: vegetarians who avoid meat and poultry.

- Type III: vegetarians who avoid meat and fish.
- Type IV: vegetarians who avoid meat, fish, and eggs.
- Type V: vegetarians who exclude meat, fish, eggs, and dairy products.
- Type VI: strict vegetarians or vegans who only eat plant-based foods with no animal origin at all.

Furthermore, below we detail a list of gradual vegetarian modalities of plant-based dieters (Larsson et al., 2003; Fox & Ward, 2008; IVU, 2020; de Bakker & Dagevos, 2012; Rothgerber, 2014) in order to report current evidence of possible food identities:

- Flexitarian/meat reducer/part-time vegetarian: person who practices meatless day at least once a week (de Bakker & Dagevos, 2012).
- Semi-vegetarian: person who consumes poultry but less than an average person.
- Pesco-vegetarian/pescatarian: person who eats fish as the only permitted meat.
- Lacto-ovo vegetarian: person who still consumes dairy and eggs.
- Ovo-vegetarian: person who still consumes eggs.
- Lacto-vegetarian: person who eats only dairy as animal derived product.
- Vegan: a pure vegetarian who avoids all food of animal origin including clothing.
- Fruitarian: a vegan who only eats foods that do not kill the plant.

In light of this, flexitarianism is becoming a better-accepted alternative and is being spread among a wider public since it introduces opportunities for transformation of traditional meat consumption patterns in society. This alternative enables less active ‘food citizens’ to face the dietary challenge in a more flexible way (de Bakker & Dagevos, 2010). The vegetarian route is perceived thus as a process, a journey of change in the dietary behaviour with its intrinsic identity transformations and extrinsic individual and collective benefits (Devine, 2005). Flexitarianism assists in familiarizing consumers with meatless or meat-reduced products and actively supports individuals in their consumption commitment either weak or strong to cut out the meat intake. Every mild shift within personal lifestyles has a substantial impact on the transformation of the general food consumer culture towards more sustainable societies (de Bakker & Dagevos, 2012).

2.1.1.3 Vegetarianism as a transforming movement

Considering vegetarianism as an action for transforming the world, we could understand it from an environmental perspective, from the lens of a social transformation, and from the standpoint of an ethical-political action. First, from an environmental perspective, what a person decides to eat makes a difference (Marlow et al., 2009). Therefore, consumers can take part in green economy by adopting green lifestyles based on voluntary simplicity, self-sufficiency, and sustainable consumption (Binder & Blankenberg, 2017). In this vein, Maurer (2010) suggests that there is a potential overlap between the environmental movement and the vegetarian movement, as both have tendency to merge and create synergies (Morris & Kirwan, 2006).

Through the means of the dietary change, especially in affluent regions, environmental goals could be reached with an efficiency of 50% in GHG emissions reduction and extensive land use demand affecting biodiversity, all related to the current omnivore diet. Here vegetarianism is a strong candidate for a sustainable diet being considered as climate friendly for its low intake in red and processed meat (Hallström, Rööös & Börjesson, 2014). In chapter 2.3 we develop this subject deeper and provide further information on environmental degradation caused by livestock production and excessive meat intake as well as the proposal for a sustainable diet. As this concern has already gone beyond the boundaries of green economy recommendations, a dietary shift from the environmental perspective is now a vital need to implement into our daily food reality.

Second, understanding vegetarianism as a social transformation, the main arguments of vegetarianism from a social perspective embrace not only animal rights and welfare, but also spread across wider dimensions of the environmental sustainability, human health, and a relief to world's hunger (Kalof, et al., 1999). The philosophy of vegetarianism focuses on a concrete call to action that stands for a partial or total meat intake reduction and inclines favourably for the alternative of the vegetarian diet. Therefore, vegetarianism embraces a wide range of individuals with different levels of commitment related to meat avoidance. In accordance with this, vegetarianism is also being advocated as a more socially sustainable form of consumption through healthcare

reduced costs associated with the widespread adoption of vegetarian diet as a health-food movement (Morris & Kirwan, 2006; Maurer, 2010).

Nevertheless, the alternative nature of vegetarianism has always been opposed to the mainstream dietary and moral patterns of society. Nowadays, vegetarianism expands its scope to the position of challenging the dominant food ideology of Western culture and becomes a vehicle for a social emancipation rather than a dietary lifestyle (Jabs, Sobal & Devine, 2000; Morris & Kirwan, 2006). G.B. Shaw, one of the most important public figures from the early counterculture of the Victorian movement, puts vegetarianism into the position of humanitarian social change, interconnecting his views about health with ethics, philosophy, and politics (Wixson, 2015).

Third, vegetarianism, perceived as ethical and political action, conveys through the means of ethical food shopping an alternative solution designed to create a progressive social change by implementing ‘citizen-consumer’ model. This hybrid model aims to merge the individual self-interest of a consumer and his/her everyday purchasing demands with the collective responsibility of exercising his/her power as a citizen (Johnston, 2008). Indeed, consumers may exercise their voting power by a selective shopping also known as boycott. This consumer activism has been employed by diverse spectrum of public and served as a vehicle for anti-consumption behaviour to make a difference at the level of everyday life and has been empowered through individualized collective action (Micheletti, 2003).

In line with this, throughout the history food consumption has been connected to moral and political problematization owing to its direct connection with uneven economic growth, environmental challenge, and global welfare justice. Consequently, consumers are able and ought act upon their power of free choice to modify market mechanisms, improve production processes in order to make them fairer, more transparent, and beneficial for a better life for all (Sassatelli & Davolio, 2010). Ethical eating is a growing trend that comprises multiple fan of consumer activism embodied in vegetarianism, organic food, Fair-Trade coffee, direct farmer-to-consumer marketing and the Slow Food movement (Guthman, 2003). Accordingly, consumers can become important active contributors to build more sustainable societies employing their purchase power through the means of selective food choices that are both healthy and

respectful to ecological and socially ethical standards (Johnston, Szabo & Rodney, 2011; Ghvanidze et al., 2016).

2.1.2 Origins and evolution of vegetarianism

2.1.2.1 Origins of vegetarianism

The history of vegetarianism in Europe dates back to ancient Greece, more concretely to the 6th century BC, considering Pythagoras to be the father of this ancient consumption practice (Spencer, 1996; Ruby 2012) who spread the abstention from meat among other Greek philosophers such as Plato, Plutarch, and Porphyry (Spencer, 1996). In Plato's Republic, the workers were all vegetarians and in Plutarch's essay on flesh eating, he defies meat eaters to kill their own food (Silverstone, 1993). In Asia, the practice of vegetarian diet originated approximately in the 7th century BC, in the Land of the Rising Sun where the emperor, guided by the importance of Buddhism, prohibited Japanese people from eating meat. So until the 19th century, Japanese dwellers based their nutrition mainly on rice, beans, and vegetables (Nakamoto et al., 2009).

In medieval times, vegetarianism was associated with Christian religion as a part of the pattern of fast and feast days. The 18th century witnessed the birth of modern vegetarianism connected with the first Romantic Movement. By 1847 the Vegetarian Society was founded and still exists today (Silverstone, 1993). In the 19th century, the vegetarian movement in Anglo-America and continental Europe already laid its foundation while in Russia the first appearance of vegetarianism waited until 1890 when Tolstoy introduced to the Russian society his vegetarian debut 'The First Step' (LeBlanc, 2001). Many famous philosophers, writers, artists, and celebrities advocated the cause of vegetarianism based on the abstinence from meat. These vegetarian adherents include, among others, Pythagoras, Plato, Plutarch, Seneca, Ovid, da Vinci, Rousseau, Shelley, Tolstoy, Thoreau, Schopenhauer, Wagner, Shaw, Gandhi, Kafka and, recently, Linda McCartney (Silverstone, 1993; LeBlanc, 2001; IVU, 2020).

2.1.2.2 The First Vegetarian Society

The first significant rise in vegetarianism is associated with the foundation of The Vegetarian Society, the very first vegetarian organization, created in the United Kingdom in 1847 to support and educate vegetarians (Neale et al., 1993; Gregory, 2007; Preece, 2009; Amato & Partridge, 2013). The term ‘vegetarian’ replaced ‘pythagorean’ on September 29, 1847 in Ramsgate, England (Maurer, 2010). The Victorian England of the 19th century in its urban areas provided a fertile soil for modern vegetarianism, while the rural areas continued under the influence of traditional ways of life. The vegetarian diet was introduced with aims to empower the agility of the new working class in factories and reshape the traditional perspective of the manly force derived from meat. Manchester was the first industrial city where vegetarianism was systematically promoted (Teuteberg, 1975; Lee, 1997). By the end of the 19th century, vegetarianism was thriving and in 1889 there were 52 vegetarian restaurants in Britain with 34 in London (Calvert, 2007).

Vegetarianism, during its early stages, was frequently interrelated with complementary ideas such as temperance reform, self-help movement, women’s liberation, or alternative therapies, to name a few. This influence helped to evolve vegetarianism into its modern shape currently focusing on the animal factory farming, a matter that was far distant from the aims of the ‘old’ vegetarianism back in the 19th century (Twigg, 1981; Whorton 1994).

In the 1940s veganism was excluded from the scope of the Vegetarian Society. In the 1960s vegetarianism was refreshed and, consequently, the ‘new’ vegetarianism was born as a counterculture movement and lifestyle (Amato & Partridge, 2013; Lindquist, 2013). Two significant changes happened at that time: first, the enjoyment of the cookery was introduced and second, more exclusive boundaries between vegetarianism and other alternative movements were established. Vegetarianism finally found its independency as ideology heading away from the idea ‘flesh is bad’ towards the idea of ‘vegetable is good’. In the light of this evidence, vegetarianism cannot be understood as a mere constant concept, yet a dynamic body of processes in evolution influenced by its interconnectedness with other ideas (Yeh, 2013).

2.1.2.3 Evolution of vegetarianism

Before the 19th century, the spread of vegetarianism was based on moral and metaphysical arguments (Whorton, 1994). During the ancient times, vegetarianism in Europe was often referred to as Pythagoreanism (Shapiro, 2015). Later on vegetarian diet started to fusion with religious beliefs rather than science, which gave vegetarianism reputation of fanaticism and, thus, retarded objective evaluation and recognition by the mainstream nutritional science. It was not until the mid 20th century when the spread of vegetarianism reshaped its ideology and focused on nutritional aspects of the vegetarian diet that helped find allies within the parallel alternative health movements such as hydrotherapy in the United Kingdom and USA, both leading defenders of the early spread of vegetarian movement (Whorton, 1994).

Vegetarianism was granted with rising acceptance in Victorian England as a result of nutritional science (Whorton, 1994), social activism, and eccentric personality of G.B. Shaw among others (Wixson, 2015). In spite of the accelerating growth of vegetarian population during the 20th century, only 3.7% of the total adult population identified themselves as vegetarians (Neale et al., 1993). In the recent years of the 21st century, a global shift towards vegetarian diet has become progressively noticeable. Not only the acceptance, but also the increasing popularity of veg*nism is on the rise among a wide public. Google Trends show 90% increase in ‘vegan’ searches in 2016. Google searches for ‘vegan’ have never been higher than in January 2020 (see Figure 1). Furthermore, Google Trends affirms that the search term ‘vegan’ quadrupled from 2004 to 2019 (Google, 2020).

Figure 1

Google searches for terms 'vegan' and 'vegetarian'



Worldwide comparison for Google search terms 'vegan' and 'vegetarian' during the period of 2004-until March 2020. Source: Google (2020).

Additionally, the scientific evidence also indicates that the number of vegans is on the rise, especially in wealthier countries (Key, Appleby & Rosell, 2006). The number of vegans in the United Kingdom quadrupled between 2014 and 2018, from 0.25% of the population (150,000 vegans) to 1.16% of the population (600,000 vegans) (The Vegan Society, 2020). However, the practice of vegetarianism varies widely around the world. Although the representation of the vegetarian community is nowadays still very small, it is significantly growing among Europeans. According to a 2013 survey in the United Kingdom, 25% of the public had reduced its meat consumption in the past year and 34% indicated their willingness to eat less meat (Ruby, 2012). Additionally, in USA 37% of adults order vegetarian meals always or sometimes when eating out (The Vegetarian Resource Group, 2016).

European polls estimate approximate rates of vegetarians of 3% in the United Kingdom, 6% in Ireland (Ruby, 2012), 9% in Germany, 8% in Switzerland (Ruby, 2012; Schenk, Rössel & Scholz, 2018), and 8.5% in Israel (Ruby, 2012). Besides this, approximately 8% of vegetarians are in Canada, 3% in USA, 1-2% in New Zealand, 3% in Australia, and 40% in India (Ruby, 2012). For instance, more recent polls indicate growth of 67% in American vegetarian population from 2012 to 2016 reaching 5% of the population (Appleby & Key, 2016; Schenk, Rössel & Scholz, 2018). These figures amount to more

than one hundred million people in just the United Kingdom and USA alone who exhibit some degree of vegetarian dieting (Rosenfeld & Burrow, 2017b; Lindquist, 2013).

2.1.2.4 Vegetarianism as a nutritional science. Tendency of dietary well-being.

The late 18th century introduced a new perspective on vegetarianism, which separated philosophical from scientific as a result of growing authority of science within the European culture. Vegetarianism became more accepted, offered more human attitude towards animal life that greatly characterized the English Romantic era. However, vegetarianism had to prove itself not only spiritually but also nutritionally (Whorton, 1994). Before the 20th century, vegetarianism provided a nutritional superiority enhanced by the fact that meat rots at great speed outside the body and it would trigger internal putrefaction if eaten. This argument was supported by further scientific evidence during the 19th century (Whorton, 1994). According to Tryon's experiment, meat decomposes faster than fruit and vegetables, and tends to putrefy before eaten; hence, it was assumed to likely rot afterwards once ingested into the human body. Already at that moment, it was proved that humans not only could survive without eating meat, but their health could also thrive on a vegetarian diet (Whorton, 1994).

In line with this, further scientific evidence on vegetarian diet and human well-being was introduced. For instance, Dr. Kellogg performed research at his health institute, and as a result of it, he designed a raw vegetarian breakfast, known as Kellogg's cereals and embodied his discoveries about relation between colon and well-being in the book 'Colon Hygiene'. The book contains his medical discovery about omnivore diet suggesting that excessive levels of animal protein cause growth and activity of proteolytic bacteria in the colon and thus, contribute to autointoxication causing headaches, depression, skin problems, chronic fatigue, deterioration of liver, kidneys, and blood vessels, among other diseases. His work enriched the scientific argument of nutritional safety of vegetarian diet abundant in fibre and low in animal protein content (Whorton, 1994).

Another instance of nutritional experiments of the 20th century is the case of doctor Haig who designed a diet to guarantee the physical excellence of numerous athletes that achieved great level of success in sports. Therefore, vegetarian diets proved their athletic resistance and practicality thanks to many vegetarian victories in all sports in the 1890s and early 1900s (Whorton, 1994). In the present time, numerous scientific discoveries from the 21st century conclude that three quarters of all pathogens causing a wide range of human diseases are originated in the meat consumption, this phenomenon is known as zoonosis and is further detailed in chapter 2.2 proving decreased levels of physical well-being, longevity, and life quality (Deckers, 2009).

2.1.2.5 Socio-demographic characteristics of vegetarians

Socio-demographics factors such as gender, race, religion, and social class may mutually interact with the expression of vegetarian self-identity. Therefore, it is of vital importance to study vegetarianism not in an isolated manner but within the complete dynamic context to capture its rich interrelations (Rosenfeld & Burrow, 2017a).

As for gender, women are more likely to be vegetarian than men (Ruby, 2012) with the ratio of female to male being approximately two to one (Neale et al., 1993). Michalak and colleagues reported 70% females in their study comprising on 244 vegetarian people (Michalak, Zhang & Jacobi, 2012). A stronger vegetarian orientation can also be found in younger females in comparison to older people and male population. Overall, the majority of vegetarians tend to be women (Janda & Trocchia, 2001). This figure is consistent with the fact that women have always eaten less meat than men and are more open to ethical and moral arguments of vegetarianism. They also suffer more from cultural pressure about beauty model and thinness than men do (Evers, 2001; Janda & Trocchia, 2001). Another subjacent reason for more women becoming vegetarian may reflect their greater concern for animal welfare, environment, healthier eating, or their interest to experience different culinary practices (Neale et al., 1993).

Regarding the age, older population is generally more resistant to change. Contrarily, younger people are more open-minded and receptive to new alternative lifestyles and cultural trends. Scientific evidence proves that younger adults are more likely to have

vegetarian-oriented behaviours and, therefore, consume higher levels of meatless products compared to older adults (Janda & Trocchia, 2001). Young educated individuals represent a gradually expanding and trend-setting consumer group (Schenk, Rössel & Scholz, 2018). In this vein, vegetarianism tends to be the movement of the sons not of the fathers (Twigg, 1979). Also, the vegetarian segment, in some cases is alike to the gourmet segment in the context of distinction. Vegetarian consumers tend to occupy social positions from middle to upper class (Maurer, 1997).

Considering religious beliefs, food is often the central point in religious systems and represents the connection between the person and the world (Rozin, 1996). The practice of vegetarianism has been profoundly influenced by eastern philosophies embodied in Buddhism, Hinduism, and Jainism, where the idea of non-violence aims to spread compassion towards all living beings. The animal consumption encompasses all the suffering, violence, and fear originated in the production process of the meat. The Western interpretation for this effect is of casual proximity represented in that by consuming violence one becomes a violent person. And the only way to find personal enlightenment is by respecting all life forms and avoiding animal killing for food (Evers, 2001). Since meat represents dead food, it implies the ingestion of dead animals and, consequently, the death itself (Twigg, 1979).

From a political ideology standpoint, historical evidence considers vegetarians as radical or independent thinkers who disapprove violence, war, and the oppression of man by man (Shapin, 2007). Vegetarians tend to be more liberal and develop more altruistic values such as pro-environmental and pro-social behaviour, social justice, and equality compared to omnivores who defend more traditional values enclosing security, obedience, family, and social order (Ruby, 2012). Also, vegetarians share a more humanist point of view compared to the normative perspective of omnivores (Lindeman & Sirelius, 2001).

2.2 Vegetarian motivations and identity

In this section we introduce evidence on motivations for vegetarian commitment from different perspectives leading to animal intake reduction in people's daily habits, which

enhance overall human health and potential development. More specifically, we look into general motivations and motivational taxonomy models. In addition, we also deal with the identity aspects of vegetarianism. Through the means of vegetarian identity management, we obtain a clearer comprehension of why certain individuals decide for this way of life performing hierarchical levels of control in their diet. Furthermore, we identify ideologies and symbolism related to meat, food hierarchy, animal nature, vegetarian parallel movements, McDonalidization of society, trash food, omnivore's and meat paradox, and ecofeminism that become vehicles to illustrate the evolutionary process of the current shape of the dominant culture. Undoubtedly, the implicit conclusion urges for construction of an improved perspective for our present and future well-being and this chapter aims to place foundations to achieving such an ambitious goal via a cultural social change.

2.2.1 General motivations for vegetarianism

The motivations that inspire people to commit to vegetarian diet encompass concerns for animals, health, environment, and spirituality, values exhibiting bigger ideologies in which food becomes a vehicle for expression (Lindeman & Sirelius, 2001). According to some authors, vegetarian diet is not an ultimate goal itself but a means of achieving a larger goal (Rosenfeld & Burrow, 2017b). In line with this, people who are related to nature and use vegetarianism as a catalyst also report having a sense of purpose in life and higher levels of self-acceptance (Nisbet, Zelenski & Murphy, 2011). Therefore, the relation between motivation and vegetarianism can be clearly conveyed from the following statement: 'the higher the motivation to adopt a vegetarian diet, the higher the restriction of animal products from the diet' (Neale et al., 1993).

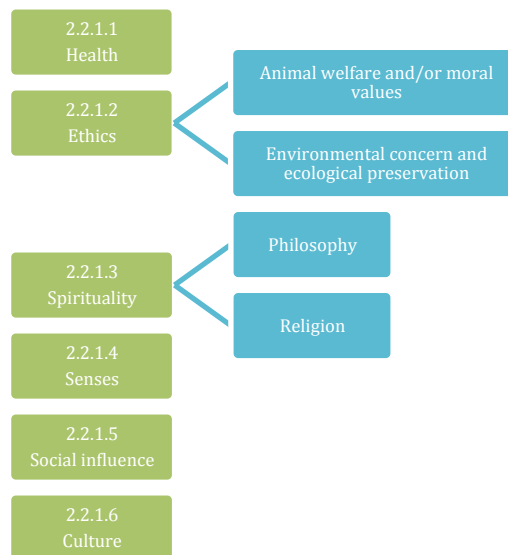
In order to review the list of common causes that motivate people to adopt vegetarian diets in its gradual phases (flexitarian/semi-vegetarian, lacto-pesco vegetarian, lacto-ovo vegetarian, vegan, fruitarian, to name a few), we can find below six primary categories with its relevant subcategories. This permits us to create an overall conception of what inspires individuals to avoid meat consumption over a period of time. Although there are scholars who focus either on particular or more generic motivational perspective, this list is designed to explain the widest possible angle of motivations and thus obtain a

complete picture of what motivates people to belong to this minority group as for their nutritional behaviour. In line with this, Beardsworth and Keil (1992) identified four primary motivations for converting to vegetarianism: health, animal welfare or moral, sensory, and ecological (Janda & Trocchia, 2001).

The motivational taxonomy we design is as follows (see Figure 2):

Figure 2

Vegetarian motivational taxonomy model



Classification of motivations enclosing variety of reasons that support the vegetarian commitment.

2.2.1.1 Health vegetarians

A large part of modern-day vegetarians from Western cultures decide to commit to vegetarian lifestyle predominantly for health reasons in comparison to ethical or religious motives that used to prevail among our vegetarian predecessors (Beardsworth & Keil, 1993). This can be acknowledged through the increase in the demand for ‘health’, ‘organic’, or ‘natural’ foods within modern societies that is also positively associated with vegetarian orientation of consumers who prefer to eat less meat and introduce more vegetarian options in their diet (Janda & Trocchia, 2001).

Health oriented vegetarians are not primarily focused on the subjacent ideology of vegetarianism, which we outlined in chapter 2.1; they rather target more conservative concerns such as food safety. On the other hand, a well-designed vegetarian diet is medically recognized as healthy and nutritious, benefitting from lower levels of saturated fat, cholesterol, animal protein and providing higher levels of antioxidants such as vitamins C and E, folate, fibre, magnesium, potassium, phytochemicals, and carotenoids. In line with this, vegetarian diets help in preventing coronary heart disease, obesity, atherosclerosis formation, hypertension, renal disease, cholesterol issues, type 2 diabetes, and prostate and colon cancer. Therefore, a well-designed vegetarian diet is scientifically recommended for all stages of lifespan, including during infancy, childhood, adolescence, pregnancy, and lactation (Janda & Trocchia, 2001; Nobis, 2008; Alvaro, 2017).

One of the prevailing reasons to avoid meat intake in the case of health vegetarians is the use of hormones in livestock, which is considered to be cruel not only for animals but also extremely dangerous for human health (Janda & Trocchia, 2001). According to the growing body of medical research, omnivore diet based on production and consumption of animal products and by-products is amply harmful and suggests instead a vegetarian orientation for its health benefits derived from vegetables, legumes, fruits, and whole grains (Beardsworth & Keil, 1991; Nobis, 2008; Rothgerber, 2013). Furthermore, there is a rich evidence that confirms negative effects of meat and dairy products on human health, namely: cancer, heart disease, diabetes, breast cancer, obesity, mortality, sickness, zoonosis, to name a few.

Cancer

In 2015, 22 scientists from the World Health Organization (WHO)'s International Agency for Research on Cancer (IARC) revised 800 medical case studies and concluded that consumption of processed and red meat is carcinogenic to humans. This evidence is based on positive relations between meat consumption and colorectal, stomach, pancreatic, and prostate cancer. The research also suggests connection between cancer and consumption of all kind of animals including white meat, beef, and pork (Bouvard et al., 2015).

Heart disease, diabetes, and other illnesses

In 2005, the authors of The China Study discovered the link between protein intake and cancer development among a large human sample of 6,500 adults from 65 different counties across rural and semi-rural China with similar lifestyles, similar genetic background, and wide range of diseases. They concluded that people following a plant-based diet and excluding all kind of meats, fish, dairy products, eggs, and animal by-products will avoid, reduce, and even reverse the development of diverse illnesses such as coronary heart disease, diabetes; breast, prostate, and bowel cancer, to name a few (Campbell, 2004).

Breast cancer

In 2014, the scholars of Harvard University found a positive correlation between one daily-consumption of red meat during adolescence and 22% increased risk of premenopausal breast cancer as well as 13% higher risk of breast cancer for adult red meat intake (Harvard University, 2014).

Obesity

Meat consumers tend to suffer from obesity three times more than vegetarians and nine times more compared to vegans. Hence, vegan diets develop approximately 16% faster metabolic rates than meat eaters (Montalcini et al., 2015).

Mortality

In 2013, a research from JAMA Internal Medicine demonstrates that vegetarians are likely to live longer than meat eaters since vegetarian diet is linked with reduction in all-cause and specific-cause mortality (Orlich et al., 2013). Vegetarian diet, therefore, reduces various chronic diseases related to mortality and contributes to increase an overall health and longevity as a result of plant based food (Dyett et al., 2013; Martínez-González et al., 2014, Katz, 2019).

Sickest population

USA is considered to be the sickest nation in the world. One of the possible reasons is the connection with excessive meat consumption that triplicates the global average. This, consequently, causes higher health-related expenses than in other countries. In spite of investing in health, Americans die sooner and suffer from more diseases than other world populations. Despite relative improvement in health, they cannot reach the speed of life improvements attained in other countries (National Research Council & Committee on Population, 2013; Alvaro, 2017).

Most of human diseases are linked to zoonosis

After a careful review of 1,407 species of human pathogens, it was discovered that almost three quarters of recently emerged human diseases are linked to zoonosis, a disease that can be transmitted from animals to humans. Hence, the livestock life conditions are directly connected to public health challenges. Examples proving this evidence are the emergence of H5N1 avian influenza virus and diseases originated from the ingestions of *Cryptosporidium* that can be found in drinking water, among others (Deckers, 2009). More recently the emergence of SARS-CoV-2 in central China at the end of 2019 is another example of zoonotic origin and transmission between species (Ye et al., 2020).

Higher intelligence and meat avoidance

In 2007, a research performed in the UK concluded that children with higher intelligence were more likely to become vegetarians 30 years later (Deckers, 2009).

Genetic change

Further findings on health benefits of vegetarianism suggest that diet and lifestyle are relevant factors for the achievement of change in gene expression, reduction in elevated genetic risk, and eventual transformation of the architecture of our chromosomes (Katz, 2019).

2.2.1.2 Ethical vegetarians

Ethically oriented vegetarians base their ideological foundations on animal welfare and environmental concern. In line with this, their diet is a reflection of a wider philosophical, ideological, humanistic, and/or spiritual context (Fox & Ward, 2008). Regarding the animal welfare, the concern for quality of life of animals and the feeling of guiltiness associated with their killing are the strongest motivators to influence people's food choices (Deckers, 2009).

The practice of eating animals is considered a form of human over animal domination and also a hierarchical domination in human-to-human relations based on control, power, and suppression of the weak (Allen et al., 2000). Ethical vegetarians provide a wider perspective of reasons supporting their commitment to vegetarianism than health vegetarians and they believe that meat originates undesirable changes in personality such as awakening of the animal-like behaviour (Rozin, 1996; Rothgerber, 2014). Additionally, ethical vegetarians stay longer as vegetarians than health-oriented vegetarians (9.97 vs. 5.9 mean years) as a result of their higher motivational commitment (Hoffman et al., 2013).

Intensive animal farming not only causes pain and misery to nonhuman sentient beings, but it also carries a disastrous impact on the ecological and human health. There are two important areas of ethical concern: animal welfare and/or moral values and environmental concern (Alvaro, 2017). In order to address motivations in favour of animal welfare and moral values, we identify the following aspects of relevance: utilitarian perspective, ethics of virtue, cannibalism, semantic preferences for animals, inflicting pain on nonhuman beings, distinction between pets and farm animals, and vegetarian convergence.

Utilitarian perspective

An action is considered as morally acceptable if its consequences generate the highest levels of good for the greatest number of sentient beings (Alvaro, 2017). From a human supremacist perspective, human interests gain over animal ones since humans are gifted with higher intelligence and therefore, have also greater interests compared to animals

and thus, justify their prevalence (Dixon, 1995). When applied to vegetarianism, a pitfall emerges because eating animals might be viewed as correct in order to fulfil the interests of the highest number of human population (Alvaro, 2017). In this line, scientific experiments are rather performed on nonhumans since humans are considered to experience higher levels of suffering than animals (Dixon, 1995).

Ethics of virtue

This perspective defines a virtuous life as the one that may lead to ethical veganism not from the utilitarian perspective aiming to maximize value and interests but rather to convey an example of a good moral character, which Aristotle called ‘greatness of the soul’. Ethics of virtue is an ancient philosophical approach and promotes respect for other life forms, compassion, nonviolence, justice, and awareness of the environmental impact of our food production. This philosophy considers as immoral the practice of eating meat when available plant-based alternatives that are equal or even superior in nutrients, which particularly happens in affluent countries (Fox, 2013; Alvaro, 2017).

Nuanced relationships prevent cannibalism

In line with this, the American philosopher, Cora Diamond states that we do not slaughter people for food or eat dead human bodies even if they had died naturally or their meat was tasty and nutritious. This savage situation fortunately does not happen although it has nothing to do with our respect towards their moral interests or aim to maximize utility. The differentiation is established in understanding of the concepts such as ‘person’, ‘friend’, and ‘pet’ as they all encompass a rich variety of sentiments and moral relations. We do not eat our friends or pets, although theoretically we could eat pets but generally we do not as a result of our complex relationships and feelings towards them that constitute aspects of greater prevalence (Diamond, 1978).

Regarding the meat wastefulness, if it can be morally acceptable to avoid eating human meat in spite of its wastefulness, it should be also morally adequate to abstain from eating the bodies of nonhuman animals. Hence, the duty of not eating human bodies is to avoid the possible pleasure from human meat consumption, which might eventually place in danger our human species (Deckers, 2009). From a cannibalistic perspective,

by eating animals it is very likely to eating humans too. A similar conclusion might be achieved if we shed more light on organ transplants and uncover the taboo veil of a modern form of Westernized cannibalism (Giannitrapani, 2018). According to Irvine (1989), we may find certain inconsistency in human nutrition because people allowed their stomachs to triumph over their minds and, therefore, the task of ethical vegetarians does not consist in convincing carnivores' minds but their stomachs.

Semantic preferences for animals

In line with the Sapir-Whorf hypothesis, the language we speak influences the way we think. Therefore, instead of using the terminology of 'slaughtered or dead animals', the marketing of meat industry prefers to employ different terms, namely 'patties', 'hamburgers', 'hot-dogs', 'steaks', 'drumsticks', and 'McNuggets' in order to remove any imagery of the animal from the plate (Evers, 2001).

Inflicting pain on animals

According to Ruby's findings (2012), concern about morality of slaughtering animals becomes the prevalent vegetarian motivation. Killing animals for food implies religious and moral consequences translated into inflicting suffering on sentient beings (Janda & Trocchia, 2001). The moral perspective relies on the fact that nonhuman animals can feel the pain as humans and hence, we have the moral obligation to avoid causing unacceptable levels of pain on other sentient organisms. Therefore, vegetarian diets inflict less pain and violence on animal beings compared to omnivore diet and avoid deliberate killing of animals for food (Deckers, 2009).

In order to bring animals to our plate, everything is taken from them so that they can be eaten. They are harmed and suffer throughout the whole food process, which is rationalized and adapted to human interests. And even though medical science disapproves animals as a part of healthy diet proving that vegetarians enjoy better health than their omnivore counterparts, most people still continue in their reasoning that they need to eat meat, milk, and eggs (Nobis, 2008).

Pets and farm animals

In the work of Joy (2010) 'Why we love dogs, eat pigs, and wear cows' we can acknowledge the existence of inconsistencies in our general attitude towards the treatment of animals. Despite their similarities, we cannot ignore a particular class distinction between animals destined to our plate from those who will become our companions. Consequently, animal right advocates intend to reduce this gap between pets and farm animals to reach an equal treatment and thus erase species supremacy transferred from social dominance orientation across human out-groups (Leite, Dhont & Hodson, 2019).

Vegetarian convergence

Veg*anism is considered as morally obligatory and both movements generate convergence, support each other mutually, and add more weight together rather than separately (Fox, 2013). Considering that Earth provides us with sufficient and adequate plant-based food without the need to incur in the unbearable environmental and social costs, abstaining from killing and eating animal bodies is morally imperative in order to respect life of other living beings (Deckers, 2009).

Animal rights have become one of the most pressing ethical disputes of our times. From the utilitarian perspective of moral philosophy, raising animals for food is immoral as it minimizes the overall happiness. In a similar way, deontologists consider raising animals for food immoral since animals have certain rights and humans have duties towards them (Alvaro, 2017). From the ethical and moral perspectives, vegetarianism rejects class distinction and prefers instead brotherhood where the social transformation is achieved in the hearts of people (Twigg, 1979).

In order to address motivations based on environmental concern and ecological preservation, below we undertake a brief look at the sustainability challenge. First, we identify what is considered motivation based on environmental concern, second, we analyse natural resources depletion caused by meat intake and finally, we provide some findings on vegetarianism as a more sustainable option.

Some studies may treat environmental or ecological reasons of vegetarianism as ethical; however, we can also find them treated separately (Rothgerber, 2013). This certain academic scarcity on specific definition of reasons encompassing environmental concerns was clarified in further works where ecological concerns were detailed as resource scarcity, environmental sustainability, and rainforest clearing (Beardsworth & Keil, 1992; Janssen et al., 2016). The ecological motivation for vegetarianism connects the consciousness of people's daily food choices, executed at least three times a day, with their environmental impact. The macro and micro ripple effects of meat-based diets enclose issues related to water shortage, water pollution, soil erosion, and world hunger (Evers, 2001).

The vegetarian solution to lessen environmental degradation and reverse natural resources exploitation is a gradual reduction in meat intake over a continued period of time. In USA only, approximately 50% of all water resources is used to feed livestock besides more than half of water pollution is caused by livestock waste, namely manure, eroded soils, pesticides, and fertilizes (Adams, 1990). Illustrating water consumption in figures, a vegan person needs roughly 300 gallons of water daily; a lacto-ovo vegetarian requires about 1,200 gallons while a meat-based person consumes strikingly around 4,200 gallons of water (Adams, 1990).

As for land exploitation, livestock farming occupies almost 90% of all agricultural land. According to the Sierra Club's Sustainable Diet, if Americans reduced their meat consumption by only 10%, it would have saved enough grain to feed over 60 million people (Robbins, 1998). In accordance with this, EAT-Lancet Commission confirms similar conclusions by developing research on a more global level (Eat Forum, 2019). These robust arguments provide sufficient proof suggesting that vegetarianism might be the most feasible and influential act most people can engage with and thus, preserve our environmental and natural resources (Robbins, 1998; Evers, 2001). Nevertheless, in the next chapter 2.3, we provide detailed evidence on the detrimental impact of omnivore diet for collective well-being, and we also present further findings on environment in order to gain a clearer conception of the consequences and hidden realities of our meat-based culture.

2.2.1.3 Spiritual vegetarians

According to Silverstone's perspective (1993), spiritual motivations for adopting vegetarian lifestyle encompass both philosophical and religious motives. From the perspective of philosophical reasons, we find that vegetarianism, during the era of Pythagoras, was connected to metempsychosis, understood as the transmigration of souls, and through the means of the vegetarian diet, individuals could avoid the devastating effects of cannibalism (Shapin, 2007). Additionally, many vegetarian adherents relate their meat avoidance to the principle of 'ahimsa' (terminology introduced by Gandhi to refer to the practice of non-violence to other sentient beings) that promotes the practice of compassion towards all living beings (Twigg, 1979). From the Western point of view, individuals decide not to consume animals as food because it awakens violence within humans and therefore, hinders personal enlightenment (Evers, 2001). Hence, vegetarianism understood as a materialization of freedom via food choice becomes a new field where one can express one's life philosophy (Lindeman & Sirelius, 2001).

From the view of religious motivations, vegetarian principle for dieting has its ancient origins in the appointment between the creator and the man in the Garden of Eden (Whorton, 1994; Calvert, 2007)). Meat eating was then the constant reminder of our sinfulness originated in the first sin of Adam and Eva (Shapin, 2007). From the perspective of Eastern philosophy that is embodied in religions such as Buddhism, Hinduism, and Jainism, vegetarianism aims to propel a harmless way of living (Twig, 1979).

2.2.1.4 Sensory motivations

It is also common to observe that some individuals might feel aversion towards meat, its taste, texture, smell, or a simple sight of it (Twigg, 1979; Rozin, Markwith & Stoess, 1997). And the reason for this repulsion might be originated in its direct connection with the former living organism of animal, the slaughtering method, or the meat itself. These negative sensory perceptions relate to unpleasing odour, taste, or its abominable

appearance, which consequently lead to its consumption avoidance (Janda & Trocchia, 2001).

2.2.1.5 Social influence

Nowadays, vegetarianism and its strictest version, veganism, have become trendy and popular among a growing number of influential people from different social spheres. Therefore, many individuals get inspired to adopt vegetarian commitment in admiration of those whose behaviour they wish to mirror, since vegetarians are perceived as healthier, more disciplined, attractive, and empathetic than omnivores (Beardsworth & Keil, 1992; Doyle, 2016).

Vegetarians here represent a model or aspirational reference group to follow. Although some individuals may still consume certain meats, they prefer to label themselves as vegetarians in order to belong to this reference group and benefit from the gains in their social status (Janda & Trocchia, 2001) since vegetarians tend to occupy social positions from middle to upper class (Maurer, 1997). For instance, in USA, a healthy low-calorie diet is not affordable to all (Forestell & Nezelek, 2018). Consequently, social influence serves as a vehicle to adopt vegetarian beliefs among a wider public (Janda & Trocchia, 2001). In this line, a growing number of celebrities, for example, Al Gore, Bill Clinton, Ellen DeGeneres, Natalie Portman, Mike Tyson, Beyoncé and Jay-Z among others, support the vegan cause either for health or ethical reasons. This appealing growth among this social class helps in reconstructing the perspective on the formerly stigmatized vegan community and spreads more virally the culture of healthy and ethical food consumption (Doyle, 2016).

2.2.1.6 Cultural motivation

The vast majority of scientific knowledge on vegetarianism is based on modern Western societies where, controversially, vegetarians occupy a cultural minority of 3 to 6% contrary to India where vegetarianism has been practiced at a more general level for centuries (Ruby, 2012; Orlich et al., 2019). In the traditional India, vegetarians occupy 40% of the population, constituting the leading vegetarian country in the world (Ruby,

2012), more specifically, they represent between 10% and 62% of the population accounting for region variations (Orlich et al., 2019). However, according to recent polls, India together with its neighbouring countries is undergoing a dietary transformation mimicking the Westernized nutritional model that translates into a 10% reduction in overall vegetarians during the past decade (Orlich et al., 2019).

In Western cultures, vegetarians generally do not commit to this diet from birth but the conversion process occurs as a voluntary decision triggered by a life event while Hindu vegetarians follow the meatless diet since birth for faith, culture, and community (Beardsworth & Keil, 1991; Orlich et al., 2019). As for Western vegetarians, they are characterized to be more liberal than omnivores while Indian vegetarians are more traditionally oriented since Hindu vegetarianism has been strongly related to asceticism and purity. From the Hindu perspective, animal welfare comes to second place, since the main motivation focuses on body liberation avoiding pollution from the meat intake (Ruby et al., 2013).

Having outlined the most prevalent motives for vegetarianism, several scholars suggest that vegetarians experience a progressive transformation in their motivational journey where initial reasons are being enriched with new motivations and hence, evolve throughout lapse of time in order to manage their dietary restrictions consistently (Beardsworth & Keil, 1992; Fox & Ward, 2008; Ruby, 2012; Timko, Hormes & Chubski, 2012).

2.2.2 Motivational taxonomy models

2.2.2.1 Health and ethics categorization

A common categorization in qualitative studies about vegetarianism in Western cultures relies on two primary dietary motivations: health and ethical concerns (Rozin, Markwith & Stoess, 1997; Jabs, Devine & Sobal, 1998; Janda & Trocchia, 2001; Fox & Ward, 2008;). In this line, the recent rise of vegans tends to base their food choices primarily on animal welfare (ethics) and health concern enhancing health oriented lifestyle behaviours (Radnitz, Beezhold & DiMatteo, 2015). This categorization concept encompasses within the same field of ethics - spiritual, environmental, animal, and

human welfare – and considers these motivations operating altogether rather than separately. Health and ethics categorization model has been employed in a rich evidence of vegetarian studies. However, many scholars find it nowadays rudimentary since there is a broader background of subjacent motives that complement and reinforce each other and thus, demand to evolve this basic binary taxonomy (Beardsworth & Keil, 1992; Rothgerber, 2013; Janssen et al., 2016, Rosenfeld & Ruby, 2017b).

Those vegetarians who commit to this diet for ethical convictions, experience a stronger connection with the vegetarian cause and therefore, eat less animal products as well as tend to stay longer as vegetarians than those who commit only for health reasons (Ogden et al., 2007). Consequently, ethically oriented vegetarians prove stronger dietary commitment than health-oriented vegetarians (Rozin, Markwith & Stoess, 1997; Ruby, 2012; Hoffman et al., 2013). On the other hand, Beardsworth and Keil (1991) confirm that behavioural changes in dietary patterns are often driven by multiple motivations. In this line, another study also suggests that consumers are usually more fuelled by a mix of motives rather than a single cause (Rothgerber, 2013). Accordingly, there is a growing demand for multiple motives implementation within the vegetarian studies in order not to limit vegetarians to a single motivation only (Janssen et al., 2016).

2.2.2.2 Internally and externally oriented motivations

Most contemporary theories concerning motivations suggest that people start and persist at certain behaviours because they believe that with those behaviours they will achieve a desired goal. Intrinsically motivated behaviours trigger self-determined spontaneous activities following individuals' inner interests. However, when an intrinsically rewarded activity receives an extrinsic reward, people tend to feel controlled by the reward, transforming thus an intrinsic into extrinsic motivation and, therefore, feeling less intrinsically motivated (Deci & Ryan 2000).

Integration here becomes the most advanced form of internalization of extrinsic motivation with other aspects of the self and, therefore, serves as a unifying element between intrinsic and extrinsic motivations. Only when outer regulations are successfully integrated and accepted, people can apply them with harmony and

coherence to other facets in their life. In other words, what was at the beginning an external regulation will be adopted as a self-regulation as long as people don't feel pressure to do it (Deci & Ryan 2000).

If we relate intrinsic motivation or individually oriented self-interest to vegetarianism, we find that health-oriented vegetarians focus more on intrinsic goal achievement encompassing health management and illness avoidance (Fox & Ward, 2008). Therefore, they present a higher level of self-interest compared to ethically and environmentally motivated vegetarians (Beardsworth & Keil, 1992; Janssen et al., 2016). On the other hand, extrinsic motivation or collectively oriented volunteering of vegetarianism leads to ethical dimension of pro-environmental behaviour to consume differently by consuming less, which can endow great social and ecological advantages. According to several scholars, adopting vegetarian and vegan diets can lessen the environmental impact of our consumer lifestyles (Tukker et al., 2008; Marlow et al., 2009; Stehfest et al., 2009; Schösler, De Boer & Boersema, 2012; Bajželj, 2014). Consequently, vegetarianism serves as a means to promote both individually and collectively oriented behaviours with intrinsic and extrinsic nuanced motivations.

The motivations enclosed in the paragraph 2.2.1 may influence individuals to commit to vegetarianism for a single or combination of several causes and hence, create a fertile soil for the development and construction of the vegetarian identity. However, if we consider motivations from a wider perspective, we may attain a clearer comprehension of the vegetarian identity (Rosenfeld & Burrow, 2017a). In the next paragraph and in order to continue with the motivational taxonomy, we present a model designed by Rosenfeld and Burrow (2017a), in which they interconnect three motivational groups (pro-social, personal, and moral) and provide thus an enriched alternative to the common vegetarian motivational taxonomy of health and ethics (Ruby, 2012).

2.2.2.3 Unified model for vegetarian identity (UMVI)

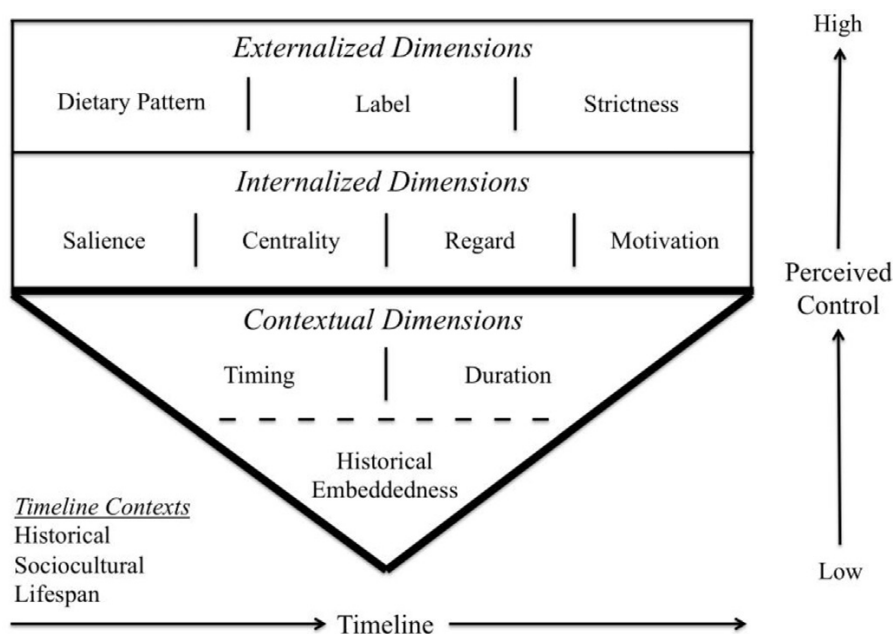
The concept of UMVI for vegetarian categorization introduces a novel model designed to provide a holistic perspective on vegetarian identity within Western cultures. The UMVI delivers solution to the common challenge of vegetarian identity status where

some individuals with occasional meat consumption label themselves as vegetarians while others who follow vegetarian diet strictly, do not consider themselves as vegetarians at all. This vegetarian categorization threat relies on the difference between orientations towards either vegetarian diet or meat avoidance and therefore, may condition social interactions and psychological well-being (Rosenfeld & Burrow, 2017a).

The UMVI introduces ten dimensions to quantify the diversity of vegetarian identities, which are multidimensional and unique to each vegetarian. And even these dimensions have been already studied separately; it is through the UMVI framework when they are synergistically unified altogether to understand vegetarianism within one's self-concept. These ten dimensions include: historical embeddedness, timing, duration, salience, centrality, regard, motivation, dietary pattern, label, and strictness. They are organized into three levels: contextual, internalized, and externalized and arranged by the degree of perceived control (see Figure 3) (Rosenfeld & Burrow, 2017a).

Figure 3

UMVI model



Multidimensional model designed to understand vegetarian identity as a subjective process. It defines three levels: contextual, internalized, and externalized dimensions that are operationalized by the degree of perceived control. Source: Rosenfeld & Burrow (2017a).

Level 1: Contextual dimensions (Rosenfeld & Burrow, 2017a)

- a) *Historical and sociocultural embeddedness* refer to the context conditions under which a person becomes vegetarian.
- b) *Timing* explains the time course of the person's commitment with vegetarianism throughout his or her lifetime.
- c) *Duration* represents the amount of time that a person declares being vegetarian.

Level 2: Internalized dimensions

- d) *Saliency* determines the extent to which being vegetarian is a relevant aspect of one's self-concept in a concrete social context. It is usually unstable.
- e) *Centrality* is the extent to which a person perceives being vegetarian as a predominant feature of his or her self-concept. Generally it is stable and tends to influence saliency.
- f) *Regard* (*private regard*—how vegetarians see themselves, *public regard*—how omnivores perceive vegetarians, and *omnivore regard*—how vegetarians feel towards animal food consumption) encompasses perceived evaluation of vegetarian and omnivore social groups and their behaviours in terms of positive-negative considerations.
- g) *Motivation* (pro-social, personal, and moral) explains a person's reasons for following his or her dietary pattern. A large number of vegetarians experiences combined-motives due to the fact that an individual can experience high levels of all three orientations, low levels of all three, or any combination in-between (Rothgerber, 2014).

The UMVI, therefore, delivers a relevant contribution via its motivational dimension, which contains three interconnected motivations (pro-social, personal, and moral). It provides a new perspective towards the commonly used binary motivational taxonomy of health and ethics motivated vegetarians (Ruby, 2012). By joining all non-health motives into the same category group, we would miss a deeper understanding of subjacent motivational orientations. Motivational orientations express the underlying psychological background of how vegetarians subjectively internalize specific

motivations, because vegetarians with the same reason for being vegetarian can have entirely different motivational orientations (Rosenfeld & Burrow, 2017a).

Level 3: Externalized dimensions

h) *Dietary pattern* constitutes common food decisions a person makes in regards with animal product consumption, given sufficient control over his or her food choices. It is the foundation of the vegetarian identity.

i) *Vegetarian label* refers to how an individual identifies to others in terms of dietary pattern. This concept opens up to new insights in vegetarian status between self-identified vegetarians (labelled) and individuals who follow vegetarian diet strictly, since this label challenge is actually occurring between personal identity and social identity.

j) *Vegetarian strictness* refers to the extent to which an individual adheres to his or her dietary pattern and may explain the discrepancy between the number of individuals who self-identify as vegetarians and the number who truly eat vegetarian diets.

The role of *perceived control* is to provide hierarchy within this dimensional structure; it creates a unified identity model and constitutes a subjective evaluation rather than objective measure of control. It also specifies one's ability to adapt to the environment to fit the self's needs. Internalized dimensions such as salience, centrality, regard, and motivation convert food choices into identity, whereas externalized dimensions such as dietary pattern, label, and strictness trigger vegetarian identity through behaviour. The hierarchical structure of this model permits the foreseeing of psychological well-being via increased comprehension of interactive behaviours originated from being vegetarian (Rosenfeld & Burrow, 2017a).

2.2.3 Vegetarian identity in the Western culture

Personal identity may suffer transformations in multiple contexts, and hence, we all can enact different identities in diverse situations (Bisogni et al., 2002; Goffman, 2009; Lindquist, 2013). Yet our identities evolve throughout the lifespan and are being influenced by the surrounding environment and life experiences. In this vein, the dietary

practice may lead to the emergence of explicit identities (Fox & Ward, 2008). What we decide to eat every day is the way we connect our sense of self with daily food activities that reflects our attitudes, knowledge, and socio-demographic conditions. People generally search for identities they consider aspirational and enhancing their self-esteem (Bisogni et al., 2002).

Accordingly, vegetarianism is commonly related to alternative lifestyles or mystical practices that contribute to the development of reflexive identity (Twigg, 1979). People who commit to vegetarianism are more likely to perceive and understand their food choices as instruments to define and express their identity (Beardsworth & Keil, 1992; Rosenfeld & Burrow, 2017a). Therefore, food choices represent an important aspect of one's identity (Bisogni et al., 2002), a sense of purpose in life that is related to goal pursuit and involved with identity processes (Burrow, O'Dell & Hill, 2010; Hill & Burrow, 2012).

2.2.3.1 Vegetarian self-identity

Through the means of self-identity individuals perceive the actual self of who they are and the ideal self of who they want to become. Consumption here serves as a dynamic vehicle to construct personal identities, being food consumption the great ally with social, moral, and political meaning (Rosenfeld & Burrow, 2018; Schenk, Rössel & Scholz, 2018). Since meat consumption embodies the dominance in our group relations, namely, human-to-animal and human-to-human (Allen et al., 2000; Leite, Dhont & Hodson, 2019), meat avoidance, consequently, plays an important role in person's self-identity and contributes to vegetarian identity's construction that encloses thoughts, feelings, and behaviours (Rosenfeld & Burrow, 2018; Schenk, Rössel & Scholz, 2018). Despite the growing demand in the field of self-identity and meat avoidance, quantitative research is still scarce. A recent study has discovered an existing relationship between meat consumption and environmental self-identity yet no effect was found with the identity of a 'healthy eater' (Schenk, Rössel & Scholz, 2018).

Regardless the increasing awareness of ethical, ecological, and health benefits of vegetarian diet and its importance for sustainable future, vegetarianism is still a vast

minority in figures among the Western societies. In this vein, meat avoidance is more connected to vegetarian self-identity and convenience rather than to its ethical, ecological, and health benefits (Shapiro, 2015). In light of this evidence, it is the vegetarian self-identity that channels ethical, ecological, and health commitments (Schenk, Rössel & Scholz, 2018). Furthermore, individuals who perceive themselves with strong vegetarian self-identity do not miss the taste of meat, which is one of the main motives for abandonment of vegetarian diet, and they also stay longer as vegetarians. Therefore, vegetarian self-identity is the strongest predictor for meat avoidance behaviour (Ruby, 2012; Schenk, Rössel & Scholz, 2018). Accordingly, vegetarianism ought not to be defined as a mere form of restricted dieting but as a way of being. A vegetarian individual, therefore, needs to develop a robust self-defining story strongly relevant and efficient in the task of creating his or her vegetarian identity (Shapiro, 2015).

2.2.3.2 Creating a health-conscious society

If we consider the diversity of alternative lifestyles, then the deviant identity may contribute to social capital by enriching the mainstream culture with independent thinking (Janda & Trocchia, 2001). However, some vegetarians adopt this lifestyle to emulate and be perceived as their aspirational reference group (Beardsworth & Keil, 1992). In today's health-conscious society, vegetarians or 'healthy deviants' may benefit not only from improved health conditions but also from further social gains (Romo & Donovan, 2012). And even vegetarianism might be frequently perceived from a stigmatized perspective, the act itself can be viewed as positive. Vegetarians are, in overall, healthier than meat-eaters and tend to be more socially conscious, leading thus to further activism and awareness (Janda & Trocchia, 2001; Sabaté, 2003; Craig, 2009; Romo & Donovan, 2012; Huang et al., 2012; Lindquist, 2013).

2.2.3.3 Construction of new identities via improved diet

We construct our self and our identity by the way we talk about ourselves and therefore, perceive us in relation to others. What actually constructs vegetarian identities is not the meat avoidance itself but the way vegetarians justify they do not eat meat. In line with

this, dominant identities are built on marginalization of others. Vegetarian, ethnic, female, and ecological identities, thus, have become politicized as new social movements providing postmodern societies with enriched social perspectives (Evers, 2001).

Scientific evidence proves that vegetarian self-identity is an outstanding factor conditioning motivation to avoid meat particularly among young and educated adults. However, this motivation might be hindered if there is perceived a certain social pressure to follow the dominant meat culture (Schenk, Rössel & Scholz, 2018). Vegetarian self-identity is, therefore, the prevailing reason for vegetarian commitment compared to other positive effects of vegetarian diets, since the vegetarian identity becomes the end itself. On the other hand, individuals who lack strong vegetarian identity cannot commit seriously to vegetarianism only founding their decision on environmental, social, or health-related benefits. In consequence, the most important factor for adopting vegetarianism at a long run is the development of the vegetarian self-identity (Schenk, Rössel & Scholz, 2018).

Once the vegetarian self-identity is developed, it unifies altogether the self-identity with ethical, ecological, health-related benefits, and taste perception (Schenk, Rössel & Scholz, 2018). Human beings are required to lessen the animal side in their nature so as to enhance their true human potential. There is a call for human progress and this social evolution from primitive to a civilized state of development is urged by the meat avoidance from people's diet (LeBlanc, 2001).

2.2.4 Ideologies and symbolism of meat

2.2.4.1 Meat as a symbol of masculinity and patriarchal culture

The symbolic meaning of meat represents hierarchical domination, namely: males over females, humans over animals and nature, and humans in relation to other humans (Allen et al., 2000). Meat consumption has always been associated with men, particularly, if we take into account the cultural prototype, in which meat and steak are symbols for masculinity and protein conveyors (Evers, 2001). For instance, the American culture of meat is linked to man's dominion over animals, racial

differentiation, individualism, and predominantly male meat consumption. The symbol of meat had greatly contributed to shape the history of America and, consequently, originated positive association with meat production and consumption systems. As a result, meat transmits values of masculinity, power, virility, and land domain. In line with this, vegetarianism might be perceived as feminine, un-patriotic, and in some extremes could be even considered as un-Christian (Lindquist, 2013).

In accordance with previous evidence, meat consumption not only represents human control over natural world (Fudge, 2010) but also has become a symbol of patriarchal society and a vehicle for the culture of domination (Evers 2002; Adams, 2015). Steak as the most virile form of meat has turned into the national symbol of culture of sovereignty. Therefore, if we aim to remove meat from the table, we put in danger the traditional structure of patriarchal culture, which foundations had been placed on oppression of nature, animals, and women (Evers 2002; Adams, 2015). The practice of vegan asceticism, therefore, represents a symbolic denial of domination relating to gender, race, religion, or environment (Cole, 2008).

2.2.4.2 Food hierarchy

Food is gifted with a remarkable social importance, as it constitutes the vital instrument for social life events because the content, presentation, and context of the food convey specific message and social situation. Therefore, food pattern or food identity encodes the social structure. In order to attain a clearer comprehension of meat symbol, it is of vital importance to uncover the food hierarchy and understand vegetarianism from the existing relationship with other food categories (Twigg, 1979).

Red meat stands on the top of the food hierarchy as the centre of the plate, followed by lower level meats represented by chicken and fish; below are animal by-products such as cheese and eggs. On the bottom of the food hierarchy lie vegetables treated as complementary or insufficient. The aforementioned food hierarchy mirrors the gradual vegetarian journey where individuals give up first red meat, then poultry, fish, dairy, and eggs until they ultimately reach the stage of vegans (Twigg, 1979).

2.2.4.3 Animal nature within human body

From the vegetarian perspective, meat reflects the corruption of body and consequent danger of food poisoning with further implicit effects on our behaviour. Vegetarians follow meatless diet for they believe it is the natural nutrition for humanity (Twigg, 1979). ‘You are what you eat’ principle follows the philosophy that if you eat something offensive, then you will also become offensive. As a result, it arises the function of disgust, which evolved culturally from the protection of the body from harm to preservation of the soul from harm (Rozin, 1996).

The main aversion towards meat consumption emerges from the blood imagery. Blood has been always considered as the vital fluid carrying the essence of either animal or human bodies. However, blood also carries the subjacent meaning of crime and pollution and is positively associated with aggression, power, dominion and many people may faint at the sight of it. Furthermore, the carnality of red meat bears sexual connotations too since it is focused on fleshiness, passion, and delightfulness (Twigg, 1979).

Humans want to distinguish themselves from animals by eating animals but actually, they become animal-like (Twigg, 1979; Rozin, 1996). The eating of animal flesh nourishes the animal instincts in man. By eating animals we ingest animal nature within our human nature and thus feed our animal characteristics emphasizing passion, aggression, sexuality, and strength. Vegetarianism aims to control passions as they represent human lower bodily nature, which is opposite to rational, spiritual, and moral man (Twigg, 1979).

In order to differentiate ourselves from animals while eating them, the solution is the practice of cooking as it transforms a wild beast into a civilized social being, particularly in Western societies that abstain from eating raw meat, considered as disgusting or terrifying. The semantics of the cooking process demands separate vocabulary too and disguises animal flesh into meat, pig into pork, cow into beef, to name a few. Cooking, in this case, serves as the means to transform the raw nature into a civilized culture (Twigg, 1979).

2.2.4.4 Vegetarianism and parallel movements

Valuable to note is that vegetarianism barely happens alone since it is always connected with other parallel movements, belief systems, and attitudes. Vegetarians also actively engage in animal-suffering denial, they aim to protect humanity and peace, contribute to a better waste management of our economies, preserve the harmonious food production practices, and avoid exploitative aspects of the world economy as well as they support the health improvement via reduced animal consumption (Twig, 1979).

Nevertheless, food as a self-identification is becoming now more problematic as it links the modern eater to a mere consumer lacking the knowledge about the food origins and production methods. This food uncertainty induces the resurrection of movements seeking re-equilibrium towards a complete control over one's life. Consequently, vegetarianism represents a concern with the diet and converts individual and collective contributions into a fulltime lifestyle discipline to recover the purity, the meaning, and the identity of the food and the eater (Fischler, 1988).

2.2.4.5 McDonaldization of society

The term McDonaldization of society is the process through which values and lifestyles are being influenced and produced by fast food production chains. Its impact is global and goes far beyond USA as well as it also influences a growing number of sectors in our society. Its paradigm focuses on the dehumanization associated with progressive rationalization (Ritzer, 1992). The way we eat mirrors our socio-cultural context we live in. The current dominant society is meat-based, result of the efforts of a huge variety of corporations supporting meat consumption and production (Ruby, 2012).

According to the concept of McDonaldization of society, the food falseness is misleading us away from reality, reflects the corrupted society, the malignant power of the multinational dominance in the food industry producing fake foods and promoting false needs to trigger higher consumerism among society. The trash food is the perfect ally for the TV dinners and reality shows creating, thus, a processed mass culture of consumers (Twigg, 1979). Therefore, if someone decides to step outside the mainstream

norm and dare not to consume meat, is considered as deviant. This so-called deviant behaviour may originate stigma that relates to people who label themselves as vegetarians. In Western cultures such as USA, the vegetarian diet is perceived as an opposing ideology to the traditional culture of meat and its implications. Consequently, vegetarian adherents have always been treated marginally (Spencer 1996; Evers, 2001).

Although this negative public attitude in relation to veg*ans may be shifting gradually towards higher levels of social acceptance (Ruby, 2012), omnivores express certain differences in regards with their attitudes for vegetarians and vegans, being the latter group more negatively affected (Judge & Wilson, 2019). Furthermore, evidence informs that it appears to be socially acceptable to express a negative view on veg*ans (MacInnis & Hodson, 2017) supported by the belief that veg*ans constitute a threat for social norms and the current treatment of nonhuman animals (Joy, 2010).

2.2.4.6 Natural and trash food

Vegetarians base their dietary pillars in that fruits and vegetables are natural and appetizing to all our senses and do not require further additives or refinements so that our human bodies can digest it (Twigg, 1979). Animal flesh provides less pure or wholesome nutrition than do vegetables (Haverstock & Forgays, 2012). The meat avoidance also points out to the growing demand for wholeness, purity, and natural food rejecting by this way trash foods full of colour, sugar, flavours, and emulsifiers (Twigg, 1979). Vegetarianism may also be viewed as an answer of countercultural movement regarding processed foods where consumers barely know what they truly eat (Silverstone, 1993). Meals have the special power to connect people together where the food purity unveils the character of the companions too. Therefore, vegetarianism is an individual behaviour giving the person the opportunity to connect one's consciousness with everyday situations (Twigg, 1979).

On the other hand, wholefoods require of time for preparation and active engagement that translates into its worth and value. This is also present at craftwork mirroring the deviance from the mainstream consumer culture and the active engagement in creative and independent activities reconnecting work with meaning. There is a hidden political

message in the consumption of trash foods, they are ready to eat, pre-digested, pappy as is the food for slaves (Twigg, 1979). Valuable to note is that even if we managed to shift the human diet, evidence confirms that eating less salami would eventually lead to eating more junk food that is already considered as a food group, designed to maximize the profitability of big food industries—from Big Food to Big Pharma—that thrive on the pitfall of higher status quo in spite of their obscure consequences ignored by parents and health professionals (Katz, 2019).

2.2.4.7 Omnivore paradox

Every human being is constructed biologically, psychologically, and socially by the food she or he chooses to eat (Fischler, 1988; Rozin, Markwith & Stoess, 1997; Devine, 2005). Man has been considered omnivore for a long period of time, however, this statement bears certain ambivalence. The omnivorous facets provide various assets such as freedom, autonomy, and capacity to thrive on different diets and adapt to changes in the environment (Fischler, 1988). Yet this apparent freedom conveys its threat, as the omnivore cannot obtain all the nutrients from a single food but requires of variety. Here arises the omnivore's paradox. On one hand, man needs variety of food and, therefore, is propelled towards diversity, innovation, exploration, and constant change. On the other hand, man also needs to be careful and conservative in his eating as any new or unknown food might be a potential threat for his survival (Fischler, 1988). The omnivore's paradox grows from this subjacent tension between the two extremes, neophobia (fear for the unknown, resistance to change) and neophilia (call for exploration, need for change). Applied to daily food choices, this implies the inner fight between the monotony versus change and security versus variety (Fischler, 1988).

The omnivore's paradox is based on the act of incorporation. However, the human relationship to food is more complex than the nutritional journey through the guardian of the body, the mouth. We become what we eat by incorporating food from the outside to the inside of the body. By impregnation, our organism absorbs energy, the very substance of the body. Each act of incorporation connects individual to collective, psychological to social and thus, enables us to become more of what we are, or what we would like to be (Fischler, 1988). In this line, omnivores have specialized themselves in

food choices. It is important to take into account that our current culture is related to omnivores who executed their dietary choices throughout lapse of time. Nevertheless, we also need to acknowledge the consequences of these dietary preferences at individual and collective level and hone in on the nutritional quality of these food sources, following the evidence that proves vegetarian diet able to reduce all-cause mortality (Katz, 2019).

2.2.4.8 Meat paradox

The concept of meat paradox is related to the fact that humans eat meat despite incurring in animal suffering. As a result, people seek a way to release this morally inadequate behaviour that constitutes a conflicting process of justification of their own interests. For that purpose, individuals find motivational solutions to lower their cognitive dissonance in order to continue with their immoral action, process that consequently spreads across cultures, societies, and institutions as a tool to hinder the psychological unease (Bastian & Loughnan, 2017).

The cognitive dissonance of meat eating is linked to the emotional distress triggered by peoples' engagement into eating of animal flesh, which is inconsistent with their attitudes and beliefs about harm and suffering. In other words, the dissonant attitudes confront when a person acknowledges moral rights of animals but still desires to eat their meat. Therefore, people employ beliefs about meat eating—that it is enjoyable, nutritional, or socially valuable—so that animal concerns fade away (Bastian & Loughnan, 2017). Indeed, the solution of lab-grown meat arises as an appealing commodity to continue with the growing levels of meat consumption (Mayhall, 2019).

From the perspective of the concept of carnism (Joy, 2010), we can divide animals into food and pets. Therefore, if the animal belongs to the food category, the pain and harm we execute on it comes to second place. This can be further supported by social norms of a wider collective that reduce our sense of personal decision and justify this cruel behaviour. Once the dissonance is resolved at a personal level, the individual may continue in the enjoyment of the meat more consistently. More importantly, the reduction of cognitive dissonance spreads across cultures via formation of habits,

rituals, and social institutions placing vegetarianism in a less desirable position (Bastian & Loughnan, 2017).

2.2.4.9 Ecofeminist vegetarianism

Ecofeminism is the result of a wide research developed by academics, activists, scholars, and writers within the fields of politics, history, philosophy, and literary analysis. Their findings introduce robust evidence on discrimination based on logic of domination within social structures, the same logic that placed exploitation on women, minorities, environment, and animals (Adams, 2015). In this line, vegetarianism mimics the anti-domination version of ecofeminist ethics and can flourish under favourable conditions of an affluent consumer-oriented economy (Wellington, 1995).

Ecofeminist perspective claims that patriarchal culture oppresses women in a similar way that it oppresses animals since both are subordinated to the will of men who execute their dominion over nature, animals, and female gender. Therefore, ecofeminism can be understood as oppression and as such, becomes a valid motive for most ecofeminists to commit to vegetarianism as their answer to discriminatory practices of racism, sexism, and nature violation (Fox, 2013). Ecofeminist movement, thus, has a strong interrelation with animal rights defence and environmental concerns (Adams, 2015).

In accordance with this, evidence proves that meat avoidance is higher for women than for men because meat is associated with gender role and constitutes a symbol of male identity (Schenk, Rössel & Scholz, 2018). For example, most vegetarians in USA tend to be young, female, concerned with health and animal welfare, and have been vegetarians for more than a decade (Vegetarian Times, 2008). On the other hand, women need to deal with the bias of their gender and compassion towards animals since they are considered sensitive and irrational. Consequently, feminist approach to veg*anism sheds more light on the spread of male control over different targets groups (Doyle, 2016).

2.2.5 Successful social change towards vegetarianism

Studies prove that through the intention to perform a specific behaviour we can actually enhance that specific behaviour. Therefore, behavioural intentions might be seen as good predictors for a successful dietary change but actually it is the direction of the intention what predicts more accurately the final behaviour (Ogden et al., 2007). The dietary change is the result of several motivations influencing a person simultaneously. For instance, motivations to adopt a vegetarian diet might be based on health, moral, ecological, or taste factors. Dieting usually connotes negative intentions ('I will not eat meat.') while keeping positive attitudes towards the target ('I like the taste of meat.'). which leads to unsuccessful behavioural change and a consequent failure. Positive intentions are generally more effective for a behavioural shift ('I will eat more vegetables.') and the promotion of negative attitudes towards the target ('Eating meat is unethical.' or 'I no longer enjoy high fat foods.') is more efficient for the dietary change and even more effective than health and weight motivations (Ogden et al., 2007).

The recommendation for an efficient intervention suggests motivating individuals by factors other than health and directing their intentions towards what they intend to do instead of what they will have to avoid. Research also suggests developing a strong dislike towards the target to be avoided (Ogden et al., 2007). Building a strong disgust towards the target of meat could solve the very common vegetarian barrier of the enjoyment of eating meat (Ruby, 2012). In line with this, Rozin (1997) suggested similar conclusion related to disgust as the main factor to make people dislike something. These improved interventions could become part of social and structural changes to promote healthier lifestyles where unhealthy diet would be perceived as unattractive and socially unacceptable guaranteeing thus a successful shift towards an improved human diet such as vegetarianism (Ogden et al., 2007).

2.2.5.1 Culture versus structure

The new social movements expand further through the means of culture rather than political structure because the focus is placed on personal transformation, lifestyle shift, and identity formation. These rich cultural choices offer individuals a fertile soil to

nourish and construct or re-construct their personal identity. Hence, people take part in new social movements not with the aim to trigger a social change but to reconnect with personal freedom and find a new meaning within urban middle class culture. Therefore, the main goal of vegetarianism as the movement is the search for individual freedom converting vegetarian lifestyle into more acceptable for the main culture instead of directly approaching to achieve political structural change (Evers, 2001).

Gradually, vegetarianism is gaining more credibility among the mainstream society and also more power as a political force (Dixon, 1995; Ruby, 2012). Therefore, food choices not only enclose subjective meanings but they also create communities, which share similar food patterns and ideologies, connecting thus food choices to both personal and social identities (Bisogni et al., 2002). The fostering of more mindful cultures increases individual and collective well-being as well as life satisfaction in the evolving process towards sustainable societies (Dhandra, 2019).

2.3 Vegetarianism and well-being

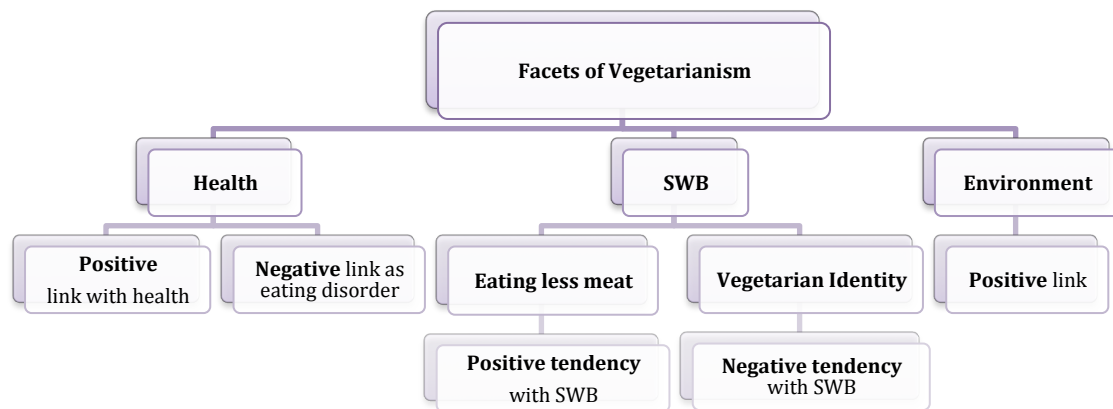
In this section we introduce findings on how vegetarianism relates to well-being. Its structure is organized into three main parts. First section focuses on vegetarianism from the lens of individual happiness. For that purpose, we define the concepts of well-being, life satisfaction, emotional well-being, subjective vitality, and self-determination theory. Next, we examine the positive and negative evidence on the relationship of vegetarianism with subjective well-being, which constitutes the foundation to objective 1 of our empirical work. Also, we identify possible causes and motivations for vegetarianism and subjective well-being.

The second part concentrates on the analysis of vegetarian effect on collective well-being with special focus on pro-environmental assets providing further information on the devastating impact of meat industry on the planet. We introduce findings that identify vegetarianism as a sustainable solution based on plant-based sources. We refer to the concept of collective well-being, analyse vegetarianism as a pro-environmental behaviour, social movement, mindful philosophy, and as a more conscious way of being. And finally, in the third part we study vegetarianism in the light of

interconnectedness between individual and collective well-being, interconnectedness from a pro-environmental behaviour, from an economic perspective and we introduce evidence on human-nature interconnectedness and its association with subjective well-being that relates to objective 2 of our empirical work. The relationship of vegetarianism and individual and collective well-being is structurally detailed in Figure 4.

Figure 4

Facets of vegetarianism and its relationship with health, subjective well-being, and the environment.



Summary of the current findings on the relationship of vegetarianism with individual (health and SWB-subjective well-being) and collective well-being (environment).

2.3.1 Vegetarianism and individual well-being

Academic demand on alternative food consumption is on the rise and seeks a higher understanding of the dynamic relationship between food habits and individual well-being. In this context, a call for research emerges in the field of vegetarianism as the embodiment of alternative food choices connected to emotional well-being, which could contribute to preserve identity, environment, and achieve the pillars of sustainability (Ruby, 2012; Batat et al., 2016).

2.3.1.1 Individual well-being: concept and definition

Before we approach the framing of the relationship of vegetarianism with subjective well-being, we need a better understanding of what subjective well-being is. Consequently, how we define the concept of well-being, will affect our policies and education since their common goal is to improve the life of humans (Ryan & Deci, 2001). As a result, the asset of increased well-being and life satisfaction contributes to the improvement of life in areas of health and longevity, work and income, social relations and social gains (Diener & Ryan, 2009). In this line, well-being is a broadly applied term in areas such as economics, social science, food marketing, and general social discourse. Its contexts encompass mental, physical, and emotional health as well as aspects of life satisfaction such as happiness (McMahon, Williams & Tapsell, 2010).

To better understand the concept of well-being applied in this work, first we proceed to define the general term of well-being, then we examine hedonic and eudaimonic perspective of well-being before we analyse subjective well-being conceptualized in its three measures (emotional well-being, life satisfaction, and vitality that are parallel to hedonic and eudaimonic aspects of well-being), which builds our objectives 1 and 2. We also provide findings on self-determination theory that shed more light on the link of basic psychological needs fulfilment and vegetarianism.

Well-being

The Oxford English Dictionary defines well-being as ‘the state of being or doing well in life; happy, healthy, or prosperous condition; moral or physical welfare of a person or community’ (Simpson, 1989). Additionally, the WHO uses well-being in its definition of health: ‘a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity’ (WHO, 1948).

Hedonic and eudaimonic perspective of well-being

The Aristotle’s perspective on human happiness identifies two dimensions: hedonic enjoyment and eudaimonia (Waterman, 1993). These two philosophies influence the concept of well-being, allocating its first dimension in hedonism (Kahneman, Diener & Schwarz, 1999) that comprehends well-being as pleasure or happiness. The second dimension, eudaimonia, refers to the well-being as the actualization of human potentials

by fulfilling one's true nature (Waterman, 1993).

As a result, hedonic perspective relates subjective well-being with happiness that is described as more positive affect, less negative affect, and greater life satisfaction (Ryan & Deci, 2001) and eudaimonic viewpoint links individual well-being to self-actualization and vitality while these both perspectives tend to complement each other (Ryan & Deci, 2000). However, perhaps the most important aspect of the research on well-being might be its interconnection with individual and collective wellness where individuals would be able to create an evolutionary route towards attainment of higher levels of personal happiness while simultaneously contributing to the global enhancement of social and planetary well-being (Ryan & Deci, 2001).

Subjective well-being

In spite of the missing general consensus on the concept of subjective well-being (Ryan & Deci, 2001; Dolan, Peasgood & White, 2008), some authors define it as an overall assessment of individual's life. We refer to subjective well-being as an umbrella concept that encompasses different subjective facets of being well, such as life satisfaction and emotional experiences (Diener & Ryan, 2009). The study of subjective well-being focuses on how people evaluate their lives from the facets of positive affect, lack of negative affect, and life satisfaction in its hedonic angle (Ryan & Deci, 2001). Also, research suggests that they show some degree of independence and therefore, should be measured and studied individually (Diener, Oishi & Lucas, 2003). In this dissertation we use well-being, subjective well-being, and happiness as a synonymous.

Subjective well-being experiences multidimensional influences from personal, economic, and social factors. These factors can be consequently grouped into several categories, such as income, personal characteristics, socially developed characteristics, leisure time, attitudes and beliefs towards self/others/life, relationships, and the wider economic, political, and social environment (Dolan, Peasgood & White, 2008). Although well-being is subjective in nature for it describes personal experiences, it can be also measured objectively through the means of self-reported measures (Diener & Ryan, 2009). These measures enclose emotional well-being, life satisfaction, and subjective vitality and have been employed in our work.

Emotional well-being

Positive and negative affect relates to emotional well-being, which is the capacity of generating pleasant emotions such as joy, calm, thrill, or enthusiasm in contrast to undesired emotions such as guilt, anger, or shame. Therefore, emotional well-being is normally considered as the difference between positive and negative emotions (Kahneman, Diener & Schwartz, 1999).

A common understanding of measuring emotional well-being is the PANAS scale (Watson, Clark & Tellegen, 1988), which is the most widespread measure of positive and negative feelings (Diener et al., 2010) that asks people about the degree of experiencing several positive and negative emotions in the past days. The degree of each emotion is normally approached using a 5-point Likert scale, in which 1 means never felt that emotion and 5 means extremely felt a certain emotion. Emotional well-being is commonly used in Psychology, although it has been applied in other disciplines such as Economics. The PANAS scale is applied in the empirical part of this dissertation.

Cognitive well-being or life satisfaction

Cognitive well-being refers to the sense of evaluation of how people are satisfied with their lives, and it is more related to the assessment of the achievements of each person (Graham, 2012). This approach to well-being is commonly known as life satisfaction. In order to quantify it through surveys, the most used question is the one referring to life satisfaction ‘Please choose the number which you feel best describes how dissatisfied or satisfied you are with your life’. People are requested to answer this question using a 5, 7 or 11-point Likert scale, in which the lowest number (normally zero) means ‘completely dissatisfied’ and the highest one means ‘completely satisfied’. Life satisfaction is commonly used in disciplines such as Economics and Sociology. Both life-evaluation measures and emotional-state questions are normally used separately, but some research have aimed to consider them together (e.g. Graham & Nikolova, 2015; Rojas & Guardiola, 2017).

Life satisfaction plays an important role within subjective well-being and represents an insight of total quality of life from the perspective of health and living standards. Therefore, subjective well-being, happiness, or quality of life are closely associated

with life satisfaction (Dolan, Peasgood & White, 2008; Dhandra, 2019). A life satisfaction question is used in this research.

Subjective vitality

Another happiness related measure that is considered in this dissertation work is subjective vitality, which is the feeling of aliveness and experience of having positive energy that translates to both physical and psychological well-being (Ryan & Frederick, 1997). The Oxford English Dictionary states that an individual with vitality has vigour and liveliness, a general energy for life (Simpson, 1989). Ryan and Frederick (1997) describe vitality as energy that is perceived to emanate from the self, being the individual a potential 'origin' of the action. Not only subjective vitality is energy, but it also conducts to a higher autonomy owing to the feeling that energy belongs to oneself.

Evidence informs that subjective vitality is linked to self-actualization, self-determination, mental health, and self-esteem and suggests that feelings of energy and aliveness may be useful in applied research as a significant indicator of personal well-being (Ryan & Frederick, 1997) covering the eudaimonic perspective (Ryan & Deci, 2001). Also, findings prove that people feel more vitality when they experience less negative mood and when they feel more positive mood (Ryan & Frederick, 1997). Additionally, conflicts, tensions, and demands upon the self jeopardize self-regulation and actualization; particularly those associated with feeling a lack of effectance, autonomy, or relatedness and therefore, diminish vitality (Ryan, Deci & Grolnick, 1995; Nix et al., 1999).

Studies in motivational psychology demonstrate that across the lifespan there are basic psychological needs that must be fulfilled to enhance well-being and vitality. Persons focusing on extrinsic outcomes such as money, fame, and attractiveness, opposed to intrinsic outcomes such as personal growth, community, and affiliation, report less vitality (Kasser & Ryan, 1999). Both happiness and vitality might belong under the same scope of positive affect, their difference is based on the fact that only vitality is defined by high energy or activation while happiness not necessarily carries such an implication (Nix et al., 1999). Self-determination theory, which will be explained in the next subsection, suggests that contexts, which support psychological autonomy, competence, and relatedness should enhance vitality, whereas those associated with

perceptions of being controlled, incompetent, or unloved should lessen vitality (Deci & Ryan, 2000).

According to Ryan and Frederick's findings (1997), vitality relates positively with perceived health, well-being, and life satisfaction, and negatively with anxiety and depression. However, the concept of vitality operates under several names in different cultures (Bostic, Rubio & Hood, 2000). For instance, the Taoist tradition of the ancient China refers to the concept of *Chi* as the unlimited source of energy available to individuals conditioned by their lifestyles. In Japan, the energy is denominated *Ki* and it is the power one can call upon to mobilize overall health. Accordingly, vitality represents an active inner force that delivers mental and physical health (Ryan & Frederick, 1997).

In our sample, we work with perceptions of experiencing energy and feelings of aliveness designed according to Ryan and Frederick's (1997) measure for subjective vitality such as: 'I feel alive and vital'; 'I look forward to each new day'; 'I feel energized' (Bostic, Rubio & Hood, 2000). These items define the tool that reports a phenomenological sense of aliveness and energy, and once summed describe accordingly the variable of subjective vitality (Ryan & Frederick, 1997). This measure for vitality is linked to objectives 1 and 2 of our empirical work.

Self-determination theory or basic psychological needs and vegetarianism

Self-determination theory proposes an interesting perspective that combines the self-realization as the basic aspect of well-being with how to reach this well-being from eudaimonic dimensions (Deci & Ryan 2000; Ryan & Deci, 2001). The hedonic approach of subjective well-being primarily focuses on pleasant and unpleasant emotions, whereas eudaimonic view explains subjective well-being from the sense of purpose in life, personal growth, autonomy, and vitality. These are commonly aligned with the humanistic way of being and develop aspects of sustainable living that might be considered as less pleasurable from a standpoint of a person who is not vegetarian (Nisbet, Zelenski & Murphy, 2011).

Self-determination theory suggests that fulfilment of the three basic psychological needs - autonomy, competence, and relatedness - is essential for psychological growth, integrity, well-being, and vitality. Therefore, need fulfilment is a natural goal of human

existence and influences meanings and purposes of human actions. In line with this, some psychologists define relatedness as a basic human need that is essential for well-being while others suggest that having stable and satisfying relationships is the main resilience factor across lifespan. Indeed, the effect of relatedness on subjective well-being is manifold and even considered as the most influencing factor on human overall happiness (Deci & Ryan 2000; Ryan & Deci, 2001).

Self-determination theory defines the causality of our actions by contrasting autonomous motivation coming from the self with controlled motivation originated from outer influence. Therefore, by engaging in autonomous activity we can foster subjective vitality and enhance our feelings of energy and well-being. Additionally, autonomy and subjective vitality might be also influenced by other psychological variables such as love, contact with nature, and feelings of competence and hence, vitality becomes the primary aspect of eudaimonia (Deci & Ryan, 2000).

The overall well-being and realization of human potential are influenced by the degree to which these three psychological needs - competence, relatedness, and autonomy - are satisfied. Clinical evidence proves that eating disorder such as anorexia nervosa is response to unfulfilled need satisfaction related to competence and autonomy. Through the means of not eating, individuals may perceive higher levels of control in their life and identity. Via body control, people find substitute need satisfaction triggered by the lack of competence, autonomy, and expression of one's true self. Therefore, this evasive need adaptation or substitute satisfaction bears eventually negative consequences for individual's vitality, integrity, and health (Deci & Ryan, 2000). In light of this evidence, it is important to acknowledge that some people adopt vegetarianism for weight control in order to fulfil some of their basic psychological needs such autonomy, competence, and relatedness. In this case, odds are that vegetarianism is not the best tool to foster individual happiness.

Additionally, self-determination theory was empirically supported by the findings of Strauss and Ryan (1987) where women diagnosed with anorexia nervosa scored higher in general feelings of ineffectance, depression, and obtained lower scores in autonomy, expressiveness, and independence in family relations. Therefore, the rigid behaviour of eating disorder relates to the lack of satisfaction of basic psychological needs (Strauss & Ryan, 1987). This empirical study sheds more clarity on the negative evidence among

females as for their subjective well-being and explains the likely reasons of hindered mental well-being connected to unfulfilled psychological needs rather than vegetarianism itself.

In line with this theory, when a psychological need is unfulfilled, people may lessen their direct attempt to satisfy that specific need and instead, they promote need substitutes, which over time will contribute to even a deeper need dissatisfaction. This situation is illustrated in the example of a woman with eating disorder trying to perform through the means of a restrictive diet more control over her results in life instead of approaching directly the lack of satisfaction of one of her basic psychological needs. This defensive need adaptation will create significant negative consequences over the person's well-being (Deci & Ryan, 2000). Relating these findings to vegetarianism, we suppose that if behind adopting vegetarianism lies a substitute need satisfaction, then the vegetarian lifestyle will not add on individual's well-being, vitality, or health since the real need satisfaction remains unfulfilled.

Previous research attempted to explain the causal relation between vegetarianism and its triggering factors such as a divorce, going to university, or other life changing events (Jabs, Devine & Sobal, 1998) so as to uncover further motivations that determine what foods are chosen either for personal or philosophical commitments (Lindeman & Sirelius, 2001). For this purpose, it is useful not to ignore the process of reflexive identity built upon a constant practice and interrelation with its inherent social context. Although vegetarianism may not always lead to positive outcomes such as healthy behaviour, it actually mirrors the reflexive identity of a person via his or her behaviour and social context (Fox & Ward, 2008).

In line with this, Kasser's research (2017) informs that sustainable consumption can contribute to increased well-being from eudaimonic perspective by fulfilling basic psychological needs – safety, competence, relatedness, and autonomy. In the first instance, happiness requires feelings of safety and security. Second, people need to feel competent or believe they are able to successfully do the things they care about and are worthy. The third need refers to our social need demanding love and connection. And finally, people need to feel free and autonomous, choosing their own behaviour rather than feeling under pressure of internal or external influences (Kasser, 2009). Kasser's findings conclude that people satisfy better their needs for autonomy and competence

when they engage in intrinsically motivating behaviours such as voluntarily simple lifestyles rather than focusing on hedonic materialistic perspective that avoids displeasure. In consequence, he suggests that living in an ecologically sustainable way can promote personal well-being (Kasser, 2009).

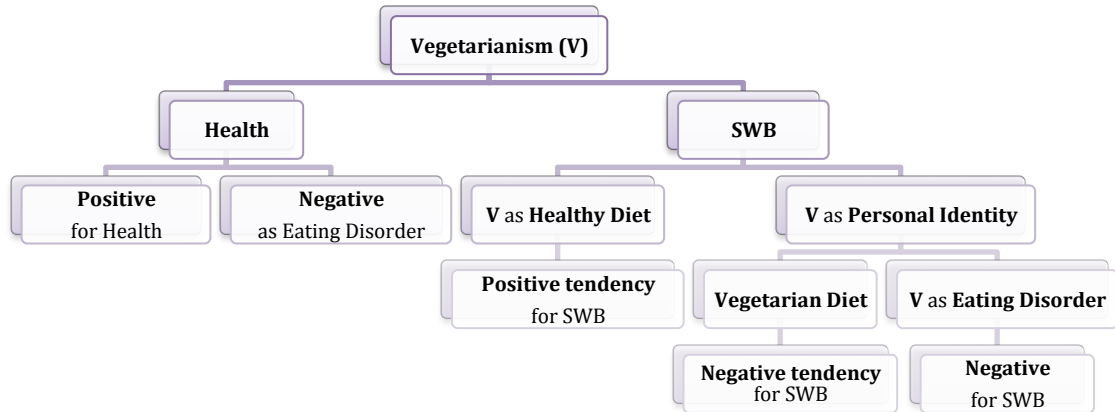
In our work, we assume that the aforementioned psychological demands are closely interconnected with the expanding outreach of vegetarianism and its holistic influence on individual and collective well-being. From the perspective of a more conscientious way of life such as vegetarianism that propels ecological and sustainable values for all living beings; we approach the following question: Are vegetarians happier than omnivores?

2.3.1.2 Relationship between vegetarianism and subjective well-being

Academic literature relating well-being with people's diets is still scarce and requires a deeper exploration (Ruby, 2012; Blanchflower, Oswald & Stewart-Brown, 2013). Furthermore, recent studies on the subject of vegetarianism and subjective well-being have provided contradictory evidence (Rosenfeld, 2018). Accordingly, the most relevant findings on vegetarianism and subjective well-being performed until now suggest the following framework (see Figure 5).

Figure 5

Facets of vegetarianism and its relationship with health and subjective well-being



Summary of the current findings on the relationship between vegetarianism and individual well-being, conceptualized as health and subjective well-being. The abbreviation *V* stands for vegetarianism.

In Figure 5 we identify two main effects of vegetarianism, first on health and second on subjective well-being. Analysing the first link on vegetarianism and health, we find a positive correlation between physical well-being and a balanced vegetarian diet. In this line, paragraph 2.2.1.1 provides rich evidence on assets of balanced vegetarian dieting as for increased levels in health, disease reduction, and higher longevity. Consequently, those findings lead to objective recognition of positive outcomes of vegetarianism on physical wellness delivered via its vital health-management. However, if vegetarianism is adopted as an eating disorder, then it affects negatively health (physical and psychological). Therefore, in this bunch, we also allocate evidence that finds a negative correlation between vegetarianism perceived as an eating disorder and health (Worsley & Skrzypiec, 1997; Lindeman & Stark, 1999; Lindeman, 2002).

Examining the second link on vegetarianism and subjective well-being, we find that vegetarianism adopted as a healthy diet generally leads to positive association (Jain et al., 2020). In this vein, there is a bunch of research that confirms a positive correlation between vegetarianism as a healthy diet and subjective well-being (Weinstein & Anton, 1982; Weng et al., 2012; Blanchflower, Oswald & Stewart-Brown, 2013; Agarwal et

al., 2015; Mujcic & Oswald, 2016; Conner et al., 2017). However, if we analyse the aspect of vegetarian identity, we discover a negative tendency between being vegetarian and subjective well-being (Baines, Powers & Brown, 2007; Michalak, Zhang & Jacobi, 2012; MacInnis & Hodson, 2017; Forestell & Nezelek, 2018; Lavallee et al., 2019) with minority of cases for positive evidence (Link, Hussaini & Jacobson, 2008; Beezhold & Johnston, 2012). In this section we also categorize findings on negative link between vegetarianism as an eating disorder and subjective well-being (Timko, Hormes & Chubski, 2012; Zuromski et al., 2015).

In the following paragraphs we examine detailed evidence and provide concrete examples on how vegetarianism relates to health and subjective well-being. First, we identify the aspect of vegetarianism and physical health. Second, we analyse the negative tendency in the link of vegetarianism and subjective well-being. In this section we also include the aspect of eating disorders. And finally, in the third part we identify causes and motivations that may lead to positive and negative outcomes in the relation of vegetarianism and well-being, which is especially useful given the nature of our objectives 1 and 2.

First, we hone in on vegetarianism and physical health. In the paragraph 2.2.1.1 we framed a detailed outline of scientific evidence supporting motivations to commit to vegetarianism on behalf of health reasons since vegetarian diet has been proved to consistently improve physical well-being from a medical perspective. The implications of vegetarian diets on human health tend to be positive as long as they link to a well-designed diet. A particular attention should be placed on the supplementary intake of calcium, iron, zinc, vitamin B-12, and EPA/DHA, otherwise the lack of these nutrients could condition certain aspects of physical and psychological well-being of vegetarians (Foster et al., 2013; Orlich & Fraser, 2014; Melina, Craig & Levin, 2016; Haider et al., 2018; Gallego-Narbón et al., 2019; Tong et al., 2019; Dobersek et al., 2020).

Nevertheless, wide evidence on vegetarianism recommends balanced meatless diets as nutritionally adequate and healthy for all stages of the lifecycle, and highlights its therapeutic influence on the treatment of some illnesses (Leitzmann, 2005; McEvoy et al., 2012; Melina, Craig & Levin, 2016). Also, vegetarians in comparison to omnivores suffer less from heart disease, hypertension, type 2 diabetes, obesity, and some cancers (Yokoyama et al., 2014; Melina, Craig & Levin, 2016). Vegetarian diets are

nutritionally superior due to its higher levels of fibre, magnesium, folic acid, vitamins C and E, iron and phytochemicals and they generally provide lower calories, saturated fat, and cholesterol intake (Craig, 2009). In sum, vegetarianism conceived as a balanced plant-based diet contributes to better physical well-being via improved health (Craig 2009; Appleby & Key 2016, Melina, Craig & Levin, 2016; Medawar et al. 2019).

On the other hand, there is evidence that links vegetarianism positively to eating disorders, phenomena particularly frequent in females who approach meat-reduced diets for weight control (Timko, Homers & Chubski, 2012; Forestell & Nezelek, 2018). Consequently, eating disorders relate stronger with aspects of lower self-esteem and depression where vegetarianism embodies a health-conscious tool to fulfil psychological needs (Lindeman, 2002; Rosenfeld, 2018). Contrarily, recent findings confirm that it is the case of omnivores who experience higher levels of disordered eating than vegans (Heiss, Coffino & Hormes, 2017) since meat avoiders commit stronger to conscious eating behaviour (Barthels, Meyer & Pietrowsky, 2018).

Second, we analyse the nature of relationship between vegetarianism and psychological well-being, which suggests us the following question: *Are vegetarians happier than omnivores?* This second part is structured into three sections. First, we discuss positive tendency in the link between vegetarianism as a healthy diet and subjective well-being. Second, we review the link between vegetarian identity and subjective well-being and its negative tendency. And finally, the third part reports negative correlation between vegetarianism as an eating disorder and subjective well-being (see Figure 4).

Vegetarianism as a healthy diet: positive tendency with subjective well-being

Adopting healthy diet based on meat reduction can be a good strategy to foster subjective well-being without committing to vegetarian identity. Below we detail evidence on the relationship of vegetarian diet with subjective well-being from the standpoint of increased fruit and vegetable intake in samples where participants did not self-identify as vegetarians. This positive facet of vegetarianism on subjective well-being is also supported by rich evidence of health motives for vegetarianism from the previous chapter 2.2.

Conner and colleagues (2017) discovered in their experiment that undergraduates from New Zealand, after having increased fruit and vegetables intake, improved their

psychological well-being, vitality, and motivation. In accordance with this, a study from the United Kingdom also related positively mental well-being with consumption of plant-based diet (Blanchflower, Oswald & Stewart-Brown, 2013). Additionally, Mujcic and Oswald (2016) attained similar results, in which a wide public from Australia increased their happiness, life satisfaction, and well-being due to their commitment to a healthy diet. Further evidence suggests that a diet with a significant plant-based component also reduces depression and anxiety (Null & Pennesi, 2017). Recent findings report that the Mediterranean diet, rich in plant-based nutrients, relates to a reduced risk of depression and improves mental health and quality of life in depressed individuals (Kris-Etherton et al., 2020; Taylor & Holscher 2020).

In this vein, Weinstein and Anton (1982) conducted a breakfast experiment on a non-vegetarian sample of male undergraduates from Canada, and concluded that meat eaters experience more negative emotions than vegetable eaters proving thus on humans that high-protein diets lead to experiencing more aggressive emotions. Another experiment undertaken in a large insurance corporation of USA demonstrated that a low-fat vegan diet among non-vegetarian insurance employees improved emotional well-being, anxiety, depression, and work productivity due to emotional health and reported that vegetarian and vegan diets can improve mood (Agarwal et al., 2015).

In China, Weng and colleagues (2012) conducted experiment among non-vegetarian urban adolescents comparing effect of Western pattern diet (unhealthy food) with traditional diet (food rich in grains, legumes, fruit, vegetables, and occasional fish intake) and proved that animal food and Western style snacks associate to high risk in depression and anxiety. Similarly, a study from USA undertaken in a vegan institute and generally destined to cancer patients conveys analogous conclusions. As a result of staying at the institute for 12 weeks and following a vegan diet, participants lowered their anxiety and depression levels as well as they increased mental and emotional quality of life (Link, Hussaini & Jacobson, 2008).

On the other hand, we also find evidence that relates vegetarian and vegan diets to an increased risk of depression (Iguacel et al., 2020). In this vein, higher levels of anxiety were detected among younger vegetarian/vegans (under 26 years) (Iguacel et al., 2020). Furthermore, depressive symptoms were present with lacto-pesco and lacto-ovo vegetarian diets (Matta et al., 2018). In spite of some contrasting evidence for

depression levels (Jain et al., 2020), overall, vegetarian diets tend to associate positively with subjective well-being.

Vegetarian identity and subjective well-being: negative tendency

In this section we introduce findings on positive and negative link of vegetarian identity and subjective well-being. Also, we acknowledge the negative tendency of those.

Positive correlation between vegetarian identity and subjective well-being

In this paragraph we highlight the important aspect of self-identification as a vegetarian. Therefore, we conduct review on research reporting positive link between vegetarian diet and subjective well-being from the perspective of vegetarian identity. Valuable to note is that when we explore the literature on vegetarian identity and subjective well-being we find a stronger controversy in evidence. To our knowledge, findings reporting positive link between vegetarian identity and subjective well-being are scarce compared to overall negative tendency on the correlation.

Beezhold and Johnston (2012) performed an experiment on American adults and discovered a positive link between individuals identified as lacto-ovo vegetarians and their improved mood. In their sample, vegetarians reported significantly better mood than did omnivores, possibly because of the nature of vegetarian diet itself rich in antioxidants, which contributes to oxidative stress reduction. Also, these scholars proved that by diminishing meat, fish, and poultry intake among non-vegetarians one could improve short-term mood. This study is in accordance with their former results from the Seventh Day Adventists sample in USA where Beezhold, Johnston, and Daigle (2010) proved that vegetarians experience significantly less negative emotions than omnivores in spite of their lower intake of long-chain omega-3 fatty acids that possibly compensate with a higher total intake of polyunsaturated fat and negligible arachidonic acid.

Negative correlation between vegetarian identity and subjective well-being

In this section we analyse evidence on negative association between vegetarian identity and subjective well-being in samples where participants self-identified as vegetarians. A recent study performed by Lavalley and colleagues (2019) among a wide public from different geographic areas (Germany, USA, and Russia) could not relate significantly

vegetarian diet to mental health. Nevertheless, these scholars discovered in China a link between vegetarianism and anxiety and depression. In accordance with this, Forestell and Nezlek (2018) worked with a sample of American undergraduates and found that vegetarians experience lower subjective well-being than do omnivores and concluded that psychological disorders such as depression, for instance, often precede the adoption of vegetarianism.

Michalak, Zhang, and Jacobi (2012) obtained a similar conclusion from an earlier work in Germany and related vegetarian diet with mental disorders, particularly among female adults. They also identified that the start of vegetarian dieting usually follows the onset of disorder. On the other hand, mental disorder may increase the likelihood of committing to vegetarianism as a result of elevated health behaviour so as to influence positively the disease. Accordingly, Forestell and Nezlek (2018) also informed that depressed individuals possibly commit to vegetarianism as a means of improvement in their well-being.

The work of MacInnis and Hodson (2017) analysed a sample of vegetarian and vegan adults in USA and Canada focusing on their feelings of belonging to a minority group. These individuals reported negative emotions and felt anxiety about revealing their veg*anism for fear of discrimination. Furthermore, vegans and vegetarians addressed their concern at workplace and confessed not being promoted or hired for a job because of their vegetarian identity. This conflict of interests is catalysed by doing less harm on other living beings and contributing to preserve healthy environment that convert veg*ans into the target of bias.

Nevertheless, this negative tendency in relation to veg*anism or so-called ‘vegophobia’ mirrors the attitude towards an alternative philosophy that jeopardizes traditional values and way of life and consequently, threatens the status quo for its distinct view of social values (MacInnis & Hodson, 2017). As a result of it, vegetarian behaviour is stigmatized and considered as eccentric or deviant by omnivores (Romo & Donovan-Kicken, 2012). Embracing vegetarianism as a way of life has direct consequences on health and subjective well-being since discussing with others about vegetarian condition may trigger interpersonal conflict (Jabs, Sobal & Devine, 2000). Therefore, these social experiences condition the vegetarian identity salience and also contribute to weaken subjective well-being (Torti, 2017).

Additionally, Baines, Powers, and Brown (2007) in their study targeted to Australian females from rural areas, also confirmed having found poorer mental health among young vegetarian and semi-vegetarian women who were in better health condition than non-vegetarian females. Similarly, a study from Toronto proved that vegetarianism might hinder life satisfaction despite offering better health condition. This research identified that restricted dieting may cause hindered subjective well-being in females and concluded that pleasure derived from eating is a relevant moderator of the relationship between restrained eating and well-being (Remick, Pliner & McLean, 2009).

Furthermore, vegetarian bias for subjective well-being is not only a female phenomenon since higher depression rates are also present in male vegetarians (Hibbeln et al., 2018). As for seasonal well-being, findings on Finish and Dutch population suggest a positive link between vegetarianism and seasonal affective disorder (SAD) that is defined as a recurrent depressive state during autumn and winter characterized by the seasonal loss of energy with recovery in spring and summer. In this scenario, vegetarians suffered from SAD four times more than other dieters (Meesters et al., 2016).

Negative correlation between vegetarianism as an eating disorder and subjective well-being

In the following lines, we identify evidence that relates negatively vegetarianism and subjective well-being from the standpoint of eating disorders within samples of self-identified vegetarians. According the study by Zuromski and colleagues (2015) in USA, there exists a relationship between disordered eating and vegetarianism in vegetarian samples and females with history of an eating disorder. Although individuals' motivations might not be directly related to disordered eating, this health-obsessive behaviour is still connected to eating pathology. In this line, another American research, performed by Timko and colleagues (2012), links vegetarianism with disordered eating, especially among semi-vegetarian undergraduates. Valuable to note is that flexibility of semi-vegetarianism is opposed to true veg*anism and it is the most likely related dieting to disordered eating.

Accordingly, Forestell and Nezelek (2018) also suggest decreased mental well-being, particularly in the sample of self-identified semi-vegetarians. As the food culture in USA is considered 'obesogenic', it propels inexpensive high-calorie food intake instead

of healthy low-calorie diet that is not affordable to all. Consequently, semi-vegetarians may seek weight control on behalf of meat intake reduction and become hence semi-vegetarians (Timko, Hormes & Chubski, 2012). In this vein, we identify the work of Lindeman (2002) in Finland who connected eating disorders, low self-esteem, and depression with vegetarian pattern among female undergraduates. She concluded that despite reporting better health, vegetarians may still feel unhappier and perceive the world more negatively than semi-vegetarian or omnivorous women do. And the reason for this is in line with previous research, suggesting that it is not vegetarianism itself that reduces well-being but it is the case of individuals with low well-being who tend to adopt vegetarian diet to lessen their symptoms.

These findings were also supported by previous research of Lindeman and Stark (1999) among the Finnish population of young students and adolescents concerned on health and weight control, self-esteem, and ideological tendencies. They concluded that disordered eating is more often related to distorted body image, self-esteem deficits, and eating disorders. Participants embraced vegetarianism to fulfil some of their psychological needs and considered food choice as ideological commitment related to health consciousness or weight control. However, valuable to note is that only the case of distressed dieters showed low psychological well-being and symptoms of disordered eating. Additionally, Worsley and Skrzypiec (1997) also provided further evidence related to teenage vegetarianism and eating disorder. Their research delivered results where adolescent vegetarians differ from adult vegetarians and they concluded that vegetarianism is a female phenomenon, in which women avoid meat intake to preserve environment, other living beings, and manage their health and body weight.

2.3.1.3 Causes and motivations for vegetarianism and well-being

The controversy in the evidence on vegetarianism and subjective well-being presents an opportunity to articulate a need for a deeper understanding of why there are differences in the relationship (Nezlek, Forestell & Newman, 2018). A possible explanation we suggested in paragraph 2.3.1 is the self-determination theory that identifies further motivations related to basic psychological needs satisfaction that ought to be fulfilled prior in order to attain subjective well-being via vegetarianism.

Although people identified as vegetarians benefit from better health, they do not manage to relate this increased physical well-being into happiness. Research suggests that vegetarianism does not necessarily decrease people's well-being but what happens is that persons who suffer from lower well-being are more likely to adopt vegetarian diet. This contradictory situation suggests a question: 'Why would unhappy people engage in vegetarianism?' A possible explanation is based in the terror management theory, which proposes that vegetarianism may be embraced as an ideology in order to grant the world with higher meaning, order, and stability and thus, one can better manage anxiety, negotiate identity, and establish peace of mind (Beardsworth & Keil, 1992; Lindeman & Stark, 1999; Lindeman, 2002). Therefore, vegetarian ideology helps people contribute to ecological well-being and better understand the self and the world we live in (Lindeman & Stark, 1999).

In this vein, several studies report that psychological disorders are generally prior to adopting vegetarian diet (Michalak, Zhang & Jacobi 2012). Consequently, depressed individuals attempt to improve their well-being by engaging in vegetarianism. Some research confirms that adopting vegetarian diet may actually increase subjective well-being (Katcher et al., 2010; Agarwal et al., 2015) since vegetarian diets are rich in nutrients such as B6, folate, and antioxidants that can lessen symptoms in depressed individuals (Forestell & Nezelek, 2018).

As regards eating disorders, contemporary Western culture performs a great influence on social values about health and weight concerns. This translates into issues of lower esteem, distorted body image that in turn positively associates with eating disorders (Lindeman & Stark, 1999). Furthermore, research until now concludes that vegetarian and semi-vegetarian women have a lower self-esteem, more symptoms of depression, eating disorders, and a more negative worldview than do omnivorous women since they perceive the world and others as malevolent and unfair (Lindeman, 2002; Rosenfeld, 2018).

On the other hand, further studies introduce findings that identify similar and not higher levels of restrained eating between vegetarians and omnivores (Forestell, Spaeth & Kane, 2012; Heiss, Coffino & Hormes, 2017; Barthels, Meyer & Pietrowsky, 2018). Additionally, vegans benefit from even lower levels of disordered eating than do omnivores (Heiss, Hormes & Timko, 2017). Nevertheless, considering wide research

that proves elevated rates of disordered eating among vegetarians, it is pertinent to highlight that disordered eating as such is multifaceted. This is supported by recent findings, in which vegetarians show more orthorexic behaviour – commitment to health-conscious eating – than do omnivores (Barthels, Meyer & Pietrowsky, 2018) and have healthier attitudes towards food issues because they are less food ‘neophobic’ or more open to trying new foods and experiences (Forestell, Spaeth & Kane, 2012).

According to general definition, semi-vegetarians avoid red meat intake yet continue consuming other types of meat and animal by-products. They are also strikingly more related to increased levels of disorder eating (Timko, Hormes & Chubski, 2012). The samples of semi-vegetarians and flexitarians are more likely to suffer from disordered eating since they do not commit either to strict vegetarian or omnivore diet and hence, it is very useful to analyse results between vegans, semi-vegetarians/flexitarians, and omnivores separately (Forestell, Spaeth & Kane, 2012; Timko, Hormes & Chubski, 2012; Rosenfeld, 2018).

In order to better understand the phenomenon of lower subjective well-being of vegetarians compared to omnivores (Baines, Powers & Brown, 2007; Michalak, Zhang & Jacobi 2012), it is valuable to note that despite its growing popularity, being vegetarian makes one belong to a minority group in Western societies, which often relates to decreased levels of well-being (Forestell & Nezlek, 2018). On the other hand, behind the scenes of vegetarian commitment, there are hidden the goal content and purpose orientation that trigger psychological outcomes such as perceived personal development and well-being (Hill et al., 2010) and vegetarianism becomes thus a bridge that connects internal and external goals via more reflexive food choices (Fox & Ward, 2008) and contributes to overall ecological well-being (Lindeman & Stark, 1999).

2.3.2 Vegetarianism and collective well-being

Analysing further facets of vegetarianism, we find its strong relation with collective well-being accounting for pro-environmental and pro-social outreach. Furthermore, the reflexive identity, personal values, and awareness fuel the transition towards the adoption of a more mindful life philosophy that embodies the development of a more conscious way of being since vegetarianism relates to individual and collective spheres

of life (Twigg, 1979; Brown & Kasser, 2005; Ruby, 2012; Rosenfeld & Burrow, 2017b).

2.3.2.1 Concept of collective well-being

In this dissertation work we employ the term ‘collective well-being’ as the unifying concept for well-being of environment (ecological wellness), animals, and wellness of society and future generations (social wellness). Therefore, the purpose of pro-environmental and pro-social behaviour is to achieve higher levels of collective well-being at ecological and social levels, respectively.

Pro-collective behaviour determines to which extent an aspiration to benefit others rather than oneself is a reason to commit to vegetarianism. Pro-collective behaviour can be understood as voluntary deeds performed to benefit others such as humans, animals, or the environment (Rosenfeld & Burrow, 2017b). Individuals, who focus on more pro-collectively oriented goals and prioritize helping others rather than themselves, experience stronger long-term well-being as a result of enhanced personal growth, purpose, and integrity (Hill et al., 2010). In this line, Ruby (2012) identifies relation between vegetarianism and higher levels of pro-collective behaviour via increased empathy towards animals and environment, altruism, and charity work that contribute to collective well-being. As a result, many ethically oriented vegetarians report high levels of conscious pro-collective motivation (Rosenfeld & Burrow, 2017b).

In this vein, frugal lifestyles connect responsible consumer with pro-social and pro-environmental outreach (McDonald et al., 2006). Current marketing efforts of green consumerism stress out the call for shift in personal lifestyles of consumers by adding a new category choice into their shopping cart - the environment, however, no actions intervene to influence individuals to consume less or at least to an acceptable environmental level (Iyer, 1999). The world needs a new kind of concerned and responsible citizen-consumer with a new lifestyle (Iyer, 1999). In the following lines, we proceed to frame vegetarianism in its facet of pro-environmental behaviour via reduced meat intake that is needed to contribute to long-term collective well-being.

2.3.2.2 Vegetarianism as a pro-environmental behaviour

By active engagement into pro-environmental behaviour we can lessen negative effects of individual consumption practices on the environment (Dhandra, 2019). In this vein, vegetarianism serves as a ‘strong’ measure of individual sustainable consumption compared to other green practices such as recycling, considered a ‘soft’ measure (Guillen-Royo, 2019). In our work we analyse individual engagement into pro-environmental behaviour that is the environmental facet of pro-collective well-being. In this line, we understand pro-environmental behaviour as practices such as: ‘Switch off lights in rooms that aren’t being used’; ‘Put more clothes on when you feel cold rather than putting the heating on or turning it up’; ‘Decide not to buy something because you feel it has too much packaging’ (Binder & Blankenberg, 2017; Binder, Blankenberg & Guardiola, 2020). This measure of pro-environmental behaviour is linked to objective 3 of our empirical work.

Environmental sustainability should not be approached as a concern mainly of businesses and governments but ought actively engage individuals with their responsibility to contribute to ecological consciousness, pro-environmental behaviours, and perceived consumer effectiveness (Iyer, 1999). According to research, our consumption habits combined with exponentially growing demand for meat is not sustainable. Therefore, even if we introduced more efficient technologies to deal with this obscure reality, it will be not sufficient, and further shift is needed at the level of more conscious meat intake (de Bakker & Dagevos, 2012). Consumers play a vital role in assuming their part as more responsible citizens who are willing to balance hedonic consumption via long-term sustainable behaviours (de Bakker & Dagevos, 2012). For example, strict vegetarians or vegans experience a greater concern for the environment than semi-vegetarians and non-vegetarians that reflects their greater commitment towards the natural habitat (Janda & Trocchia, 2001).

In this vein, a new consumer group – flexitarians – approaches this matter with a more flexible commitment to food choices that might possibly assist in shifting society’s general paradigm as for meat intake. This flexitarian approach refers to a gradual cultural shift towards more sustainable societies via moderate population involvement. Instead of committing to a ‘strong’ sustainable consumption, as is the case of

vegetarianism, this alternative path proposes a more optimistic perspective for general public of consumers who become moderate activators of change rather than executing radical dogmatic transformation of masses (de Bakker & Dagevos, 2012).

Furthermore, wide evidence connects the amount of meat we consume everyday with the way how we manage natural resources - forests, land, water, and fossil fuels. Human population could thrive on a healthy diet exempt of toxic chemical residues in the food chain, pharmaceutical additives in animal feeds, polluting chemicals, and animal wastes from runoff, loss of topsoil, deforestation and desertification, intensive exploitation of water and energy supplies, ozone depletion, extensive use of fossil fuels, and production of methane gas by cattle and avoid all this savagery just to keep a piece of meat on our plate (Fox, 2000). Therefore, vegetarianism constitutes a solid and feasible solution to this environmental challenge and provides an improved human diet via conscious meat intake reduction. Additionally, vegetarianism propels an energy-saving model for our earth's ecosystems by re-thinking our current meat production systems (Fox, 2000).

In the following paragraphs, first we hone in on the climate consequences of excessive meat consumption and second, we identify agents of current environmental pitfall of livestock farming. In the first instance, we analyse the climate consequences of meat-based diets. As we already advanced in paragraph 2.1.1.3, current diet based on excessive meat consumption has awakened a growing concern about its environmental impact and sustainability (Odegard & Van der Voet, 2014). Approximately 70% of the world's agricultural land is destined to livestock production, which has generously contributed to current biodiversity loss, soil degradation, and air and water pollution (Steinfeld, Wassenaar & Jutzi, 2006). Furthermore, previous findings also report that animal agriculture is responsible for an estimated 18% of global greenhouse gas (GHG) emissions, an amount higher than the entire transport sector. On the other hand, the lacto-ovo vegetarian diet requires less energy, land, and water than the meat-based food systems (Pimentel & Pimentel, 2003).

Food and Agricultural Organization (FAO) reports are very critical about the ecological impact of high levels of animal products consumption (Tubiello et al., 2014) and the government white papers of the United Kingdom (Foresight, 2011; Defra, 2013) highlight the urgency to reduce meat intake. In addition, FAO estimates food production needs to be increased by 70% in 2050 in order to be able to feed the global population

(FAO, 2009). According to several scholars, a new strategy line has emerged emphasizing the reduction of livestock consumption so as to lessen its environmental impacts. Instead, they promote adopting diets low in animal products such as vegetarian and vegan diets (Tukker et al., 2008; Stehfest et al., 2009; Schösler, De Boer & Boersema, 2012; Bajželj et al., 2014).

Even though it might be feasible to feed a growing population with a diet reduced in meat intake, odds are people will not be willing to give up on meat on a large scale (Odegard & Van der Voet, 2014). There is a vital need to involve governments seriously in order to moderate and diminish the global pressure placed on public health, environment, and the society (Westland & Crawley, 2012). According to the United Nations, a global move towards a vegan diet is necessary to ‘save the world from the worst impacts of climate change’ (Alvaro, 2017).

Second, we analyse agents of environmental pitfall of livestock farming that are enhanced by the rise of animal demand of the mighty middle class and of the demand for land, water, and energy sources required for livestock feed that are negatively affected by pollution from animal farming (Steinfeld, Wassenaar & Jutzi, 2006).

Livestock is inefficient

Feeding animals with grain is less efficient than if we fed directly humans because these animals consume more energy and protein than they return back to humans in the form of food (Morris & Kirwan, 2006; Alvaro 2017). In accordance with this research, committing to vegetarian diet would reduce world hunger that is likely to be aggravated by a foreseen livestock revolution in the developing world (Morris & Kirwan, 2006; Alvaro 2017). For example, in India, the annual grain consumption per person is around 400 lb., while in USA it reaches 1500 lb. but only 300 lb. of these 1500 lb. are directly consumed as bread, cereals, or pastry whereas the rest is used for meat production (Alvaro, 2017).

Livestock damages the environment

Ecological concern of omnivore diet based on livestock production encompasses GHG emissions, tropical rainforest disappearance for cattle ranching, destruction of global fisheries, water pollution from intensive livestock farming, and the inefficient use of land and water. Unlike this shadowy reality, vegetarian diet stands out for its more

efficient use of resources such as water and land, because vegetarianism avoids further land degradation, climate change, water use, and pollution (Pimentel & Pimentel, 2003) and it also offsets these problems via meat avoidance (Romo & Kicken, 2012).

Livestock demands more land

Adopting vegetarian and vegan diets would reduce land demand per capita to 2100 m² and 1600 m² respectively, compared to meat diet requiring 3500 m² of land out of which 1700 m² is arable land (Stehfest et al., 2009). In other words, a relatively large amount of land is used to produce few outputs (Steinfeld, Wassenaar & Jutzi, 2006). For instance, the lacto-ovo vegetarian diet is more sustainable solution than meat-based diet and it aims to balance the future survival and natural resource management (Pimentel & Pimentel, 2003). In consequence, it takes 2 times less land to feed someone on a vegan diet than a meat-based eater since the crops are consumed directly instead of being used to feed animals (Alvaro, 2017).

Livestock requires enormous amount of water

It is not only the animals' thirst that needs to be satisfied but also the extensive crop watering destined to animals' feed. A single cow can drink up to 50 gallons of water every day, which is doubled in hot weather. According to the USGS Water Science School, 113 g of meat requires about 1750 l of water (Alvaro, 2017). As for growing global concerns on water resources, vegetarian diet can exploit more efficiently each litre of water duplicating its nutritional benefit in food production (Morris & Kirwan, 2006).

Livestock pollutes water

A vast amount of animals raised for food produce enormous amounts of waste that pollute the rivers, lakes, and waterways in a bigger proportion than all other industrial sources combined altogether. Besides this, chemicals, pesticides, fertilizers, hormones, and antibiotics commonly used in animal agriculture not only destroy the environment but also originate numerous human health diseases. In line with this, USEPA confirms that bacteria and viruses, which are carried by the runoff, contaminate groundwater (Alvaro, 2017).

Livestock requires large amounts of energy

Animal farming consumes large amounts of energy compared to agriculture sector. Energy derived from fossil fuels is often destined to produce feed, to transport animals, and their products, to produce artificial fertilizers and pesticides and to ventilate, heat, or cool places, in which animals spend their lives (Steinfeld, Wassenaar & Jutzi, 2006; Deckers, 2009).

In spite of the detrimental consequences meat production performs on the environment, the global demand for meat is surprisingly on the rise. This controversial reality is particularly spread in the developing world, in which meat becomes a status food mimicking more affluent countries and thus expanding meat-based culture globally (Steinfeld, Wassenaar & Jutzi, 2006). For instance, as a result of how Western lifestyles influence diets in China, the demand on animal products has increased exponentially, in recent years. FAO states that meat consumption of the Chinese population grew about fivefold (from 11 to 54 kg per person) during the 25 past years until 2003. In the developing countries of Asia, the overall production of milk and meat incremented by more than 12 times and 4 times, respectively from 1961 to 2004 (Steinfeld, Wassenaar & Jutzi, 2006).

In consequence, animal farming constitutes the major contributor to environmental degradation of land, water, air, and biodiversity. The forecast for meat consumption is, however, ambitiously projected to more than double from 229 million tonnes in 1999/2001 to 465 million tonnes in 2050 and for milk from 580 to 1,043 million tonnes. Additionally, the world's population will experience further growth from 6.5 to 9.1 billion. Yet our planet cannot support this frenetic growth and consumption patterns endlessly (Steinfeld, Wassenaar & Jutzi, 2006).

In light of this evidence, vegetarianism propels a feasible solution via decreased animal products intake that not only can lessen negative consequences of livestock farming on natural resources but it also leads to reduction of human undernutrition caused by a growing competition for land (Steinfeld, Wassenaar & Jutzi, 2006). Hence, we need to acknowledge the urgent call for conversion to a vegetarian-centred economy that synergistically harnesses individual and collective well-being gains rather than continuing in the meat-based culture expansion (Fox, 2013) and adopt vegetarianism as

a sustainable diet propelling an environmental solution to lessen the obscure reality of current societies.

The concept of sustainable diet is a complex matter since numerous issues need to be addressed and correlated efficiently. FAO defines sustainable diet as: ‘a diet with low environmental impacts, which contributes to food and nutrition security and to healthy life for present and future generations’ (Macdiarmid et al., 2012). The goal of sustainable consumption would be possible to achieve if we managed to consume in different ways, particularly by reducing our consumption habits and hence diminished our environmental impact (Dhandra, 2019). A shift in human diet urges to transform current meat-based nutrition into vegetarian choices that would increase energy efficiency of fossil fuels and lower GHG emissions (Deckers, 2009).

However, approaching this dietary shift from a superficial level of conscientious omnivorism (consumption of meat produced in fairer conditions) may be not sufficient for committing to actual sustainable consumption since conscientious omnivores or ethical meat eaters violate their diet frequently, believe less in animal rights, and accept animal factory-farming conditions without feelings of guilt (Rothgerber, 2015). On the other hand, flexitarianism refers to occasional meat consumption and is considered the initial phase of committing to a more sustainable diet that reports environmental assets such as reduced GHG emissions and soil erosion due to lower meat intake influencing thus positively climate change and human health. Furthermore, it is relevant to also consider that Western societies are the biggest meat consumers exceeding dietary recommendations than any other developing country, therefore, the urgency to spread awareness and adopt a new dietary pattern is more needed in the wealthy part of the world. In this line, developing countries follow the role model of food lifestyles of more industrialized countries and as a result, they exchange their original dietary habits for Western food systems. Although ecological concerns might not appeal to wide public, health benefits on a personal level outweigh collective motivations to commit to this urgent shift in our nutrition patterns (Raphaely & Marinova, 2014).

A more vegetarian orientation in our human diet would foster sustainability of our food systems. Particularly, in areas with affluent diet, reduction in meat would substantially help in achieving environmental goals. This would translate in figures to almost 50% reduction of GHG emissions and land demand for the current diet (Hallström, Carlsson-

Kanyama & Börjesson, 2015). Westhoek and colleagues (2014) reported interesting findings from the research in the EU after replacing 25-50% of animal-derived products with plant-based foods and analysed the correspondent changes in food production. Their results proved that halving the consumption of meat, dairy, and eggs would contribute to 40% reduction in nitrogen emissions, 25-40% in GHG emissions and 23% per capita less use of cropland. The nitrogen use efficiency of the food system would increase from the current 18% to almost 47%, depending on choices made regarding land use. This would also generate a significant improvement in both air and water quality in the EU. Moreover, these dietary changes would reduce health risks, transferring 40% reduction in saturated fat intake into lower cardiovascular mortality. This dietary shift in food production would also perform great impact on economic aspects of livestock farming, supply-chain industry, feed, and meat-processing industry.

In line with this, the carbon footprint of the most climate-friendly protein sources (plant-based) is up 100 times smaller than those of the climate-unfriendliest ones (animal-based). The difference lies in food production system choice. From farm to fork, the feed production and animal husbandry are by far the most important contributors to the environmental issues (Nijdam, Rood & Westhoek, 2012). Despite the fact that livestock farming accounts for 18% of GHG emissions, up to 80% of total land use and also considering the negative effect of beef and pork on human health, it still receives little attention from the public. A global food transition towards a low-meat diet or even a complete shift to plant-based food would have a powerful effect on land use, climate change, and health. In figures, it represents up to 2,700 Mha of pasture and 100 Mha of cropland that could be freed up, resulting in a large carbon uptake from re-growing vegetation. The mitigation costs for health issues would be reduced by about 50% in 2050 (Stehfest et al., 2009).

After comparing the average GHG savings from vegetarian or vegan dietary scenarios with actual UK-average diet, it would provide a relevant decrease of potential GHG of 40 Mt CO₂ per year corresponding to a 50% reduction in current exhaust pipe emission from the entire United Kingdom passenger's car fleet. Accordingly, dietary shift towards vegetarian diets can make a substantial improvement on GHG emissions and contributes to mitigate efficiently the climate change (Berners-Lee et al., 2012). A Swedish research supports previous evidence and informs that reduced meat intake would decrease GHG emissions from meat production from 40% to approximately 15–

25% on the long-term (2050) and the share of per capita available cropland from 50% to 20–30%. These findings suggest beneficial synergies between public health, GHG emissions, and land use, triggered by reducing Swedish meat intake (Hallström, Rööf & Börjesson, 2014).

In light of aforementioned evidence, a dietary shift towards a low-meat consumption is an efficient strategy for countering biodiversity loss and climate change in developed and developing countries, in which consumption patterns are already high or growing at high speed such as China. Furthermore, biodiversity is being degraded and lost to a considerable extent with 70% of the world's deforestation due to a result of stripping in order to grow animal feed (Stoll-Kleemann & Schmidt, 2017). Consumption of meat, dairy products, snacks, sweets, pastries, and beverages (ordered from more harmful to less harmful) are the responsible agents for our current unsustainable situation. Simultaneously, these food groups mainly add on our poor health conditions. On the other hand, van Dooren and colleagues (2014) suggest that Mediterranean diet combines health benefits with a high sustainability factor and identify vegetarian diets (semi and pesco-vegetarians) as a suitable diet that offers synergy between health and sustainability. Our empirical work is emplaced in the geographic area where people follow the Mediterranean diet in their nutritional journey.

2.3.2.3 Vegetarianism as a social movement

From this standpoint, we identify vegetarianism as a vehicle for social movement that encloses local and national institutions, a rich literary movement, and a range of related commercial products and services. The inherent ideology behind the 'vegetarian movement' conveys a critical evaluation of society and offers a progressive perspective on our current consumer cultures towards heightened social well-being (Maurer, 1997).

However, the pitfall of the vegetarian ideology relies on the motivation of individuals who commit to vegetarianism as a personal lifestyle choice concerned predominantly about individual benefits such as health. This, consequently, does not help in developing further social identity of vegetarianism that aims to promote the common good through the interest in animals, environment, and public health because it is not easy to mobilize

those who are motivated mostly by self-interests. Therefore, animal rights and environmental movements as organizations tend to be more successful mobilizing public and spreading awareness for a higher collectively oriented motivation. Paradoxically, the success of the vegetarian movement is not in its membership recruitment but in greater social acceptance of the production and consumption of vegetarian-based health foods (Maurer, 1997).

Food choices and identity construction are processes strongly influenced by the surrounding social environment. Consequently, it is common that vegetarians enhance their community relatedness through vegetarian group membership (Jabs, Devine & Sobal, 1998; Jabs, Sobal & Devine, 2000). This provides a social network to support vegetarians in maintaining vegetarian diet and lifestyle, in which they can share openly their identity (Jabs, Devine & Sobal, 1998). Additionally, vegetarian group membership is very useful in the initial phase of vegetarianism as this social support may ease the transition into a new way of eating (Haverstock & Forgays, 2012). Such interactions help in building a sense of community and connectedness that satisfy the vital psychological need of relatedness and thus enhance personal well-being while simultaneously promote pro-environmental behaviour (Kasser, 2009).

Vegetarian movement actually constitutes ‘emotional communities’ or ‘new social movements’ that refer to a variety of social activism such as peace and environmental groups, feminism, vegetarianism, voluntary simplicity, animal rights, and others (Best & Kellner, 1997). These social movements represent alternative pathways to improve individual and planetary well-being via our collective interactions. However, their adherents may also experience stigmatized perception as a result of not following the mainstream culture and can be labelled as deviant (Romo & Donovan-Kicken, 2012). Nevertheless, the central aspect of these new social movements rests on cultural processes rather than political structures and, therefore, is closely related to personal transformation, shift in personal lifestyle, and new identity creation originated in cultural choices (Evers, 2001).

2.3.2.4 Vegetarianism as a mindful life philosophy

According to various scholars, mindfulness can lead to increased levels of subjective well-being since it fosters individual well-being separately from material possessions. Consumption coordinated by mindful perspective propels a more sustainable way of life and provides a novel approach for framing new tools to encourage responsible behaviours. Mindful consumption operates at a deeper level of behavioural change towards caring of self, community, and nature. Combining mindful thinking and sustainability, we can enhance pro-social and pro-environmental behaviour, reduce unsustainable patterns of materialistic consumption and achieve greater satisfaction in life (Brown & Kasser, 2005; Dhandra, 2019).

Our human nutrition has evolved from basic need satisfaction of hunger and pleasure to advanced psychological process, in which dietary patterns represent a new form for self-expression of our ideals and identity. A particular case is of vegetarians who consider their diet more than what to eat or not since they integrate vegetarianism into their life ideology (Amato & Partridge, 2013). Research confirms that ecological ideology of vegetarians is positively related to a humanist worldview, while health ideology is associated with a normative worldview (Lindeman & Sirelius, 2001).

According to several findings, consumerism is not the most effective pathway to improve human well-being (Kasser, 2006; Binder & Blankenberg, 2017; Dhandra 2019). Furthermore, evidence concludes that consuming less or consuming low-impact products does not have negative effect on well-being as it was mistakenly supposed from the materialist perspective (Brown & Kasser, 2005; Binder & Blankenberg, 2017). An expanding body of research proves that frequent engagement in pro-ecological behaviours and social conscious consumption relates positively with individual and collective well-being as a result of adopting personal lifestyles that focus on intrinsic values, mindfulness, and voluntary simplicity (Kasser, 2006; Dhandra 2019). In consequence, food choices propelled by lifestyle decisions serve as a means for people to express their personal and philosophical commitments (Lindeman & Sirelius, 2001; Fox, & Ward, 2008).

2.3.2.5 Vegetarianism as a more conscious way of being

The work of Shapiro provided broad evidence in his qualitative research that psychology of vegetarianism involves a particular way of experiencing the world. Vegetarianism is a way of being that has direct impact on the relationship to self, other people, and other living beings such as nature and animals (Shapiro, 2015). We could, therefore, transfer the concept of mindful eating to vegetarianism that brings out the value of cultivating ‘wisdom’ aiming to construct a new relationship to eating and the food in a sustainable and reflexive manner (Kristeller & Jordan, 2018).

By engaging into this form of alternative food consumption we can trigger intrinsic reflexivity since the consumer can control and reflect upon and consequently, modify his or her personal behaviour in favour of perceived benefits (Guthman, 2003). Therefore, the implementation of voluntary simplicity by consuming less is crucial for the evolution towards sustainable consumption and life satisfaction focused on nature, people, and self-growth (McDonald et al., 2006; Dhandra, 2019). In this vein, vegetarianism advocates opposition to animal based agricultures involved in harmful factory farming and aims to reform animal husbandry, protect nature as well as shift consumer preferences for healthier and more conscious ways of being (Morris & Kirwan, 2006).

2.3.3 Interconnectedness of individual and collective well-being

Individual and collective well-being have been traditionally perceived as contradictory, yet new findings inform that they are closely related and complement each other (Brown & Kasser, 2005; Dhandra, 2019). Environmental sustainability is mostly about individual human choices and actions and may become the major social issue of the present century as current population growth, consumption, and the use of non-renewable resources are not sustainable and require individual and collective shift to guarantee our present and future well-being (Mayer & Frantz, 2004).

In line with this, intrinsic value orientation, reflected in voluntary simplifiers and mindfulness, permits individuals to enjoy increased levels of subjective well-being and

pro-environmental behaviour engagement (Kasser & Brown, 2005; McDonald et al., 2006; Dhandra, 2019). Through the means of volunteering and altruistic activities, individuals can contribute to collective wellness and simultaneously foster their subjective well-being (Binder & Blankenberg, 2017).

2.3.3.1 Interconnectedness from a pro-environmental behaviour perspective

Engaging into pro-collective behaviour or voluntary simplicity can enhance life satisfaction through the means of good deeds to others and the environment (Dhandra, 2019). Voluntary simplicity promotes a simpler and more flexible way of life less focused on consumption and acquisition, and more centred on the ‘inward riches’ such as personal growth, family, community, spirituality, and connection with nature applied to urban and rural environments (Brown & Kasser, 2005; Kasser, 2009). Our individual and collective behaviour should be impregnated by conscientiousness bearing in mind short and long-term consequences of our choices and, therefore, vegetarian commitment encourages us to embrace it as a way of life. Vegetarianism also offers a compassionate co-habitation with other living beings and this way of life frees us to discover who we are in more positive, life-supporting ways that are healthy for both humans and our planet (Fox, 2000) by enacting our goals towards personal growth and life purpose (Fox & Ward, 2008; Hill et al., 2010).

2.3.3.2 Interconnectedness from an economic perspective

Through the means of vegetarian diet we can achieve not only valuable assets for health and planetary management but also this dietary shift may translate into economic benefits if we quantified the interrelated health and environmental consequences of these dietary changes. To answer this challenge, the work of Springmann and colleagues (2016) provided an interesting perspective on economic benefits in figures. Valuable to note is that the results vary depending on the status of developing versus developed country. Therefore, we could obtain the biggest absolute environmental and

health benefits from a dietary shift in developing countries while Western countries gain most in per capita terms.

Accordingly, vegetarian transition could possibly reduce global mortality by 6-10% and GHG emissions by 29-70% for a future scenario in 2050. Consequently, if we monetized the health improvement, the value would be greater than of environmental benefits. As a result, we would obtain 1–31 trillion US dollars (equivalent to 0.4–13% of global gross domestic product (GDP) in 2050) as economic gains from improving human diet (Springmann et al., 2016). In this line, health improvement was conceptualized in savings on illness treatment and decreased mortality, while GHG emission reduction (social cost of carbon and value of reduced CO₂) was accounting for environmental benefits and adopting three different dietary patterns. Below, there are average estimations for savings correspondent with a future scenario of 2050.

More specifically, if we transferred the savings on illness treatment, we would obtain on average 735 billion US dollars per year (2.3% of GDP) for regular healthy diet, 973 billion US dollars (3% of GDP) for vegetarian diet and 1,067 billion US dollars (3.3% of GDP) for vegan diet. Also, more than twice as many deaths would be avoided in developing countries than in developed ones and more than half of all cost savings (54–56%) would occur in developed countries for higher standards of living (Springmann et al., 2016).

As for decreased mortality, the economic benefits account for yearly amounts such as 21 trillion US dollars (9% of GDP) for regular healthy diet, 28 trillion US dollars (12% of GDP) for vegetarian diet and 30 trillion US dollars (13% of GDP) for vegan diet (Springmann et al., 2016). Regarding economic gains from GHG emission reduction (accounting for social cost of carbon and value of reduced CO₂) we would save 234 billion US dollars (0.10% of GDP) for regular healthy diet, 511 billion US dollars (0.22% of GDP) for vegetarian diet, and 570 billion US dollars (0.25% of GDP) for vegan diet (Springmann et al., 2016). In light of this evidence, we identify an increased economic value related to reduced health expenses (illness costs and mortality) and GHG emission savings caused by a transition towards vegetarian diet that is beneficial for both individual and collective well-being.

Furthermore, at the economic level regarding the efficiency of production processes, it is proved that by obtaining nutrients from plant-based foods we incur in fewer costs than from meat or dairy products. For instance, energy that we obtain from any kind of crops is at least five times cheaper than the least expensive meat item-broilers. In regards with the protein expenses, all crops are at least three times cheaper than pork, beef, or dairy except poultry that stays competitive with soybeans (Lusk & Norwood, 2009).

And even after accounting for the costs inherent to processing and transportation of vegetarian food, plant-based nutrients still remain cheaper than animal-based ones. However, we also need to consider variance in efficiency of all vegetarian foods. For instance, fruits and vegetables require high-quality productive land. In a similar vein, we need to account for expenses and pollution derived from further food processing. Most importantly, the aspect associated with perceived value of meat by customers cannot be ignored since it may hinder overall shift towards vegetarianism. Also, supposing we reached the ambitious goal of dietary transition, we ought to reconsider the price of meat once the whole population sustains itself mostly on plants (Lusk & Norwood, 2009).

2.3.3.3 Human – nature interconnectedness

Vegetarianism connects us with nature and in doing so, aims to minimize our impact and harm we do on the planet in our journey towards fulfilment of our demanding human needs (Fox, 2000). Modern urban lifestyles disconnect people from nature, and this aspect not only contributes to deterioration of the environment but it also decreases human happiness. People who do not feel connected to nature are unmotivated to protect it (Nisbet & Zelenski, 2011; Soga & Gaston, 2016). Human health, both physical and psychological, is related to the state of the environment and time spent in nature (Nisbet, Zelenski & Murphy, 2011). Our interconnectedness with the earth is often perceived as our ecological identity encompassing self, human, and non-human community. If we damage the planet, we damage our self as well. Indeed, an environmental self-identification is associated with pro-environmental attitudes and pro-environmental behaviour (Clayton, 2003).

In accordance with this, nature relatedness is defined as subjective sense of connectedness people experience with nature and all other living things (Nisbet, Zelenski & Murphy, 2011). The findings of Nisbet and colleagues conclude that nature related individuals are more likely to engage in vegetarianism, humanitarianism, animal defence, and environmentalism (Nisbet, Zelenski & Murphy, 2009). Connectedness to nature leads to concern for nature and relates to ecological behaviour, anti-consumerism, and development of environmentalist identity. Also, research suggests that personal well-being is linked to a sense of feeling connected to nature (Mayer & Frantz, 2004).

Consequently, people dwelling in greener environments enjoy better mental and physical health compared to those who live disconnected from nature. Moreover, nature-related people tend to be more open to experiences, agreeable, and conscientious (Nisbet, Zelenski & Murphy, 2009). As a result, embracing our connection with nature makes our lives richer and more meaningful (Nisbet, Zelenski & Murphy, 2011). Contact with nature, either real or imaginary, constitutes an effective measure to reduce stress, anxiety as well as it helps in recovering from illness (Conn, 1998). Indeed, it is especially useful in restoring psychological balance in urban environments since nature relatedness may foster positive emotional states and diminishes symptoms of mental disorders (Nisbet, Zelenski & Murphy, 2011). Similarly, findings on mindfulness conclude that increased nature relatedness through outdoor recreational activities improves emotional well-being and subjective vitality (Wolsko & Lindberg, 2013). From the ecopsychology standpoint, a strong connection with nature performs a positive effect on environmental and human health. However, the inverse relationship occurs too, which translates into that disconnection from nature leads not only to unhealthy environment but also to unhealthy and unhappy humans (Conn, 1998; Jackson, 2005; Soga & Gaston, 2016).

Although people are instinctively attracted to nature, a continuous disconnection prevents them from enjoying nature's hedonic benefits. As a result, people could avoid relating to nature and pro-environmental behaviour and mistakenly overlook advantages of nature on their well-being (Nisbet & Zelenski, 2011). Subjective connection with nature triggers our pro-collective motivation where biosphere comes to first place and predicts pro-environmental behaviour. Results show that nature relatedness enhances levels of well-being via increased vitality (Nisbet, Zelenski & Murphy, 2011) and

becomes a significant predictor for happiness particularly through the means of positive affects (Zelenski & Nisbet, 2014). This finding is especially useful for our objective 2.

In our work we analyse the individual sense of connectedness to nature via measure designed by Mayer and Frantz (2004). In this line, we understand nature relatedness as feelings such as: ‘I often feel a sense of oneness with the natural world around me’; ‘I often feel a kinship with animals and plants’; ‘I have a deep understanding of how my actions affect the natural world’. This measure of nature connectedness is linked to objectives 2 and 3 of our empirical work.

In this vein, findings of Wolsko and Lindberg (2013) in Oregon addressed the concept of individual well-being at hedonic and eudaimonic levels investigating if these both measures of psychological wellness could relate positively to emotional feelings of nature relatedness. They discovered that nature connectedness links positively to both hedonic (positive and negative experiences) and eudaimonic concepts of well-being (subjective vitality) making thus possible the achievement of the Aristotle’s perspective on happiness. Similarly, further recent findings on nature relatedness positively link contact with nature with personal health and well-being as well as with individual engagement into pro-environmental behaviours. In this line, the emotional connectedness a person experiences with nature becomes more important than the direct contact with nature itself (Martin et al., 2020).

In accordance with the aforementioned facts, wide evidence identifies the existence of a happy pathway towards sustainable societies founded on increased connection with nature that proves itself being far more effective than solely motivating people to engage in pro-environmental behaviour by the means of fear, guilt, or economic incentives (Nisbet, Zelenski & Murphy, 2009; Nisbet & Zelenski, 2011). Therefore, people in Western cultures need to transform their behaviour and consumption patterns in profound ways in order to create environmentally sustainable societies able to connect with nature not just for well-being of nature, but for humans too (Mayer & Frantz, 2004).

2.4 Vegetarian adherence

In this subsection we deal with vegetarian adherence that is the compound of short-term consistency and long-term intention to continue with a meat-reduced diet projected within the scenario of 1-2 years. First, we look at the overall aspect of vegetarian adherence in relation to environmental commitment and life purpose to examine the baseline of the applied theory. Second, we focus on the individual aspect of vegetarian adherence conceptualized via its continuity and analyse its several predicting elements. And finally, we hone in on the perspective of meatless consistency and study various factors that might become successful predictors to foster the positive link. This background constitutes the foundation to our objective 3 of the empirical work.

2.4.1 Adherence, environmental commitment, and purpose in life

Before we approach individualistically the vegetarian continuity and consistency, we will expose the reasons that link vegetarian commitment to previous theories on pro-environmental behaviour (2.3.2.2) and nature connectedness (2.3.3.3). In this line, many scholars agree that the experience of feeling connected to natural habitat may trigger engagement in pro-environmental behaviour (Gomes, Roszak & Kanner, 1995; Chawla, 1999; Schultz, 2002; Mayer & Frantz, 2004; Nisbet, Zelenski & Murphy, 2009; Hohle, 2014). Indeed, numerous findings from theoretical (e.g., Gomes, Roszak & Kanner, 1995), qualitative (e.g., Chawla, 1999) and quantitative (e.g., Mayer & Frantz, 2004; Nisbet, Zelenski & Murphy, 2009) works support this perspective. Therefore, pro-environmental behaviour could possibly mediate the link between nature connectedness and vegetarian adherence with meat-reduced diet, which constitutes objective 3 of our empirical work.

On the other hand, engagement in pro-environmental behaviours strongly relates to the reinforcement and construction of the ecological identity. Following a plant-based diet, that is the environmentally friendlier solution for human nutrition, also links to the transformational process of self-identity. The shift accrued in the personal identity is triggered hence by motivational processes that interconnect in building both identities, ecological and personal (Rosenfeld & Burrow, 2017b). Therefore, if one follows a

vegetarian diet, this can activate a stronger pro-environmental behaviour, which possibly supports dietary adherence as to avoid cognitive dissonance. The concept of cognitive dissonance relies on the desire to avoid conflicting cognitions (Festinger, 1957). Therefore, if there is a conflict between one's personal identity and one's actual behaviour, the situation can cause cognitive dissonance (Aronson, 1968). For instance, if a person follows a vegetarian diet for ecological motivations, the fact of consuming meat will hinder the chances to reduce cognitive dissonance due to discrepancies within the person's self-identity. However, if this person commits to the vegetarian diet consistently for pro-environmental reasons, the cognitive dissonance would be reduced guaranteeing thus a higher personal integrity and self-perception.

Furthermore, behaviour oriented towards promotion of collective well-being, at social and environmental levels, can develop a stronger connection with life purpose (Damon, Menon & Bronk, 2003). For instance, vegetarians integrate higher ecological motivations with their personal identity in order to fulfil the purpose of benefitting the planet and other living beings (Fox, 2000). Indeed, individuals who feel stronger connection to nature through the means of vegetarianism also report having a higher sense of purpose in life and self-acceptance (Nisbet, Zelenski & Murphy, 2011). In this vein, from a psychological perspective, the sense of purpose in life could lead to higher adherence to the vegetarian diet since the person achieves a stronger integrity and is enhanced to follow the goal pursuit (Hill, Burrow & Bronk, 2016; Hill et al., 2018).

2.4.2 Vegetarian continuity

Previous arguments of chapter 2.3 support the need to evolve our food choices into more plant-based ones in order to contribute with numerous benefits to individual and collective well-being. Interesting to note is that it is not only the initial phase of dietary adoption but also the knowledge about what makes these new habits stay on our agenda of present and future decisions to guarantee thus the assets of well-being because plant-based diets only can benefit the environment if people commit with them consistently in the long-term.

There are several factors that influence intention to continue with the vegetarian diet. In this line, the work of Jabs and colleagues studied the maintenance of vegetarian diets

and discovered positive association with personal factors (beliefs, competence, and habits), social influence (support groups and peers) and environmental resources (food availability) (Jabs, Devine & Sobal, 1998). Additionally, experiencing social norm from close spheres also influences positively intention to perform more sustainable and ethical food consumption (Vermeir & Verbeke, 2006).

These arguments introduce the relevance of considering social and environmental factors regarding the intention to continue with vegetarian diets. In accordance with this, studies prove that emotions, cognitive dissonance, and socio-cultural factors are great behavioural influencers, however, promotional strategies to approach wide public are diverse since multiple factors need to be taken into consideration (Stoll-Kleemann & Schmidt, 2017). Consequently, these findings suppose dealing with higher levels of complexity for policy interventions to promote sustainable lifestyles.

In the following paragraphs, first, we will examine evidence on the role of pro-environmental behaviour with intention to continue with vegetarian diet. Second, we will study the effect of nature relatedness on continuity and finally, we will analyse the influence of political orientation. These factors relate strongly to objective 3 of our empirical analysis.

As for the influence of pro-environmental behaviour on intention to continue with the vegetarian diet, findings by Gifford and Comeau addressed the aspect of pro-environmental behaviour but from the message-framing angle about climate change. They confirmed that motivational communication about climate change tends to be more effective than sacrifice message framing as for the intention to follow a vegetarian diet. In addition, they detected a gender difference in their Canadian community sample, in which females expressed stronger intention to continue with the vegetarian diet than did male participants (Gifford & Comeau, 2011). This result is consistent with previous works proving that intention to perform a specific behaviour can foster that specific behaviour, however, it is the direction of the intention that predicts more accurately the final behaviour (Ogden et al., 2007). This may lead us to think that behaviour oriented towards pro-environmental benefits ‘Save the planet’ would accrue more positive intentions than negative guidelines such as ‘Don’t eat meat’.

Regarding the influence of nature relatedness on intention to continue with the vegetarian diet, evidence suggests that individuals who experience higher connection with nature engage more into vegetarianism, environmentalism, and animal rights than persons who stay more disconnected (Nisbet, Zelenski & Murphy, 2009). A possible explanation for this may be the connecting role of vegetarianism with nature (Fox, 2000) that supports vegetarians' stronger relation with natural lifestyles and their motivation to adhere to the vegetarian diet over time (Twigg 1979; Beardsworth & Keil 1992).

We, therefore, estimate in our objective 3 that the commitment with vegetarian diet could be positively associated with strong relatedness to the environment that is being triggered by increased ecological values and motivations, which people express through their daily food decisions and actions. These meat reducers, either vegetarians or flexitarians, motivated by the urgent call for the environmental health, represent a new wave of possibilities for natural preservation through their connectedness to nature that may also enhance a more committed vegetarian dieting.

Considering individual's political orientation on intention to continue with the vegetarian diet, we find that Western vegetarians report higher concern for environmental sustainability and animal welfare as well as greater liberal values such as peace, equality, and justice than do omnivores who relate closer to conservative worldviews. Findings on liberal orientation of vegetarians are similar across different countries (UK, USA, New Zealand, Holland, and Italy) and are fostered by ethical motivations and empathy, suggesting that moral motivation may influence food choices (Ruby et al., 2013). Further research identified links between political ideology and plant-based dieting (Rosenfeld, 2018). In this line, vegetarian ecological identity identified not only environmental concern, universalism, and food wholeness but also political issues to be a relevant dietary motivation (Lindeman & Sirelius, 2001). For example, more conservative political adherents perceive vegetarianism more negatively, are less open to becoming vegetarians and are unlikely to adhere to vegetarian diets successfully (Črnič, 2013; Hodson & Earle, 2018; Rosenfeld & Tomiyama, 2020).

2.4.3 Vegetarian consistency

In terms of meatless adherence, many self-identified vegetarians are not consistent with their diet (Ruby, 2012). In fact, Rosenfeld and Tomiyama (2019) discovered that 51% of self-identified vegetarians reported that they had eaten meat at least once since becoming vegetarian. This figure confirms that committed vegetarian dieting represents a challenge even among self-identified vegetarians. A possible explanation for this is that people may still consume meat due to lower perceived consumer effectiveness despite their high pro-environmental awareness (Scott, Kallis & Zografos, 2019).

Evidence on vegetarian attitudes and dietary adherence found influential some of the demographic factors such as gender (females), age (younger participants), and also concern for personal health and animal welfare (Janda & Trocchia, 2001). Furthermore, the self-identification as a vegetarian may also play a relevant predictor role on the dietary adherence for increased meaning and consistency with values (Rothgerber, 2015). According to Ruby (2012), the consistency challenge with vegetarian diet is intertwined with how people self-identify themselves since many vegetarians actually eat meat. In this line, findings from a similar target group as ours conclude on meatless consistency that vegetarian self-identity plays a mediator role on ethical, environmental, and health orientations (Schenk et al., 2018).

According to Neale and colleagues (1993), a higher adherence to the meatless diet is positively related to higher motivation to adopt a vegetarian diet. Additionally, those who stay longer as strict vegetarians (three or more years) restrict more consistently their diet than flexitarians or lacto-ovo vegetarians (less than a year). Further research affirms, in general terms, that past behaviour is one of the most relevant predictors for future behaviour (Ouellette & Wood, 1998; Bacon & Krpan, 2018). Also, findings show that it is the personal commitment to eat less meat what reduces animal intake in 15% compared to individuals who only have been informed about the consequences of meat consumption (Loy et al., 2016).

There are several factors that influence consistency with vegetarian diets such as health motivation, personal competence, animal rights defence, as well as pro-environmental behaviour, nature connectedness, and social influence. As for health, evidence reports that large part of Western vegetarians commit to vegetarian diet for health reasons

(Beardsworth & Keil, 1992), which in parallel relates positively to vegetarian preference to eat less meat and maintain dietary consistency (Janda & Trocchia, 2001). On one hand, many people accomplish great transformation in their dietary habits and commit to them consistently. For instance, they adopt vegetarian or vegan diets for health reasons and adhere strongly to the plant-based diet. On the other hand, numerous individuals believe that shifting their diet would be challenging (Phillips, 1999). However, research suggests that it is the case of ethical vegetarians who adhere stronger to their diet rather than health-oriented vegetarians (Hoffman et al., 2013).

Regarding the personal competence, we find that the lack of sense of self-efficacy, including feeling unskilled in preparing vegetarian meals can constitute an important barrier to meatless consistency since people need to gain new skills to prepare vegetarian meals more confidently (Lea, Crawford & Worsley, 2006; Schösler, De Boer & Boersema, 2012, Bacon & Krpan, 2018). In a similar vein, the convenience to obtain vegetarian option relates positively to the vegetarian adherence (Schenk et al., 2018).

If we consider the influence of animal rights on vegetarian consistency, rich evidence reports that ethical vegetarians eat less animal products because they experience stronger connection with the vegetarian cause than health-oriented vegetarians (Rozin et al., 1997; Ogden et al., 2006). Recent findings on animal-motivated vegetarians show that they adhere stronger to the meatless diet due to their feelings of disgust towards meat in comparison to environmentally or health-oriented vegetarians (Rosenfeld, 2019). In addition, we find that vegetarians report stronger positive emotions to plant-based dishes than do flexitarians or omnivores. These positive attitudes are associated with their stronger empathy towards animals and humans and also higher food awareness that influences their dietary adherence (Cliceri et al., 2018). According to findings from Germany, animal motivation constitutes the most important factor for following the vegan diet (Janssen, 2016) and significantly predicts vegetarian adherence (Plante et al., 2019; Rosenfeld, 2019).

Another important factor to consider when addressing vegetarian consistency is the pro-environmental behaviour. Research shows that strict vegetarians or vegans experience a greater level of commitment towards the environment than do flexitarians and non-vegetarians (Janda & Trocchia, 2001). However, as for vegetarian adherence, findings prove that environmental motivation relates negatively to dietary consistency because of

a weaker disgust towards meat (Rosenfeld, 2019). For instance, in the case of flexitarians, reduced disgust towards animal flesh translates into occasional meat consumption decreasing thus their dietary adherence (Rothgerber, 2014). In accordance with this, evidence on attitudes and actual pro-environmental behaviour among students of environmental sciences in the Czech Republic suggests that increased awareness is not strong enough to stay consistent with meat avoidance (Šedová, Slovák & Ježková, 2016).

Analysing the influence of nature connectedness on vegetarian consistency, we find the contribution of Hohle (2014) who developed meatless consistency from the angle of how internal and external factors influence sustainable food choices. He defined internal factors as nature connectedness and meat consumption, while food presentation was considered its external aspect. Additionally, perspective on organic food consumption showed that feelings of connectedness to nature correlate to a more holistic concern for animals and environment (Schösler, De Boer & Boersema, 2013). Therefore, disconnection from nature influences on our relationship to food, too (Uhlmann et al., 2018).

Also, we need to acknowledge the aspect of social relations on vegetarian consistency, since these can encourage a shift in personal behaviour towards pro-environmental behaviour (Jackson, 2005), influence positively dietary adherence (Šedová, Slovák & Ježková, 2016; Schenk et al., 2018), and project scenarios for future dietary commitment (Šedová, Slovák & Ježková, 2016). For instance, living with a partner or friends increases the dietary restrictiveness, however, this does not apply when living with parents in the same household (Neale et al., 1993). Contrarily, current food habits of meat consumption and social factors can also play a negative predicting role on vegetarian consistency (Salonen & Helne, 2012).

3. Methodology and hypotheses for analysis

This chapter is divided into four sections. First, in section 3.1 we define the fieldwork for the empirical analysis of our work that was conducted on a new database, created for that purpose, by designing a standardized questionnaire accessible using Qualtrics. Students from different areas of discipline at the University of Granada constituted the participants of our survey. Second, in section 3.2 we identify dependent and independent variables that were assessed to study the objectives of this dissertation. More specifically, the dependent variables related to objectives 1 and 2 comprise subjective well-being, operationalized by life satisfaction, emotional well-being, and subjective vitality. The regressors compile vegetarian food identity, vegetarian self-assessment scale, connectedness to nature, and a set of control and demographic variables. The outcome variable for objective 3 is vegetarian adherence, measured in consistency and intention to continue with a meatless diet. The explanatory variables comprise pro-environmental behaviour, connectedness to nature, political orientation, and a set of control and demographic variables.

Third, in section 3.3 we specify three hypotheses of the study. First, we estimated a negative relationship between vegetarianism and subjective well-being. Second, we expected that nature connectedness moderates the relationship between vegetarianism and subjective well-being. And finally, we hypothesized that pro-environmental behaviour is a positive predictor for vegetarian adherence and mediates the relationship of nature connectedness and/or political orientation with vegetarian adherence. Fourth, in section 3.4 we detail the methods of analysis. We employed ordinary least squares method to contrast hypotheses 1 and 2 related to vegetarianism, subjective well-being, and nature relatedness. To test hypothesis 3, we conducted hierarchical logistic and ordinary least squares regressions according to outcome variable, continuity and consistency with meat avoidance, respectively. Additionally, we ran mediatory analyses to contrast hypotheses 3.1 and 3.2 identifying pro-environmental behaviour as the mediatory agent for the relation of connectedness to nature and/or political orientation with vegetarian adherence.

3.1 Fieldwork

In order to contrast our hypotheses that share the same base of fieldwork, we designed a standardized questionnaire for data collection that constituted a new database for the purpose of this research. The empirical work was undertaken during the periods of March and April of 2019 at the usual classroom environment of undergraduates proceeding from different areas of study (economics, politics, pedagogy, environment, sociology, engineering, medicine, social work, and information technology) at the University of Granada in Southern Spain.

A research team moved to classrooms and provided participants with access to online questionnaire via Qualtrics platform: tiny.cc/encuestabienestar (see Annex 1 for full version of the survey). Before answering survey's questions, participants first read the guidelines of the study and were informed about the data protection policy and their anonymity. The completion of the survey took approximately 25 minutes per participant. A large part of participants completed the questionnaire from their personal smartphone; however, in some occasions the task was approached from a laptop. No economic or academic compensation was provided for the completion of the survey. The questionnaire was completed in Spanish, the official language of the University of Granada.

The data collection process translated into 1283 observations. The sample size we worked with excludes missing (210) and nonsense values (5), accounting for the final extension of 1068 cross-sectional data for hypotheses 1 and 2. Within this sample (N=1068), 139 (13%) participants were flexitarians and 88 (8%) were vegetarians (3% pescatarians, 4% lacto-ovo vegetarians, and 1% vegans), who were retained for the analyses. These 227 participants comprised our final sample to contrast hypothesis 3. Participants in both samples ranged in age from 18 to 54 and from 18 to 46 years, with a mean of 20.69 years (SD=2.85) and 21.12 years (SD=3.56), respectively. Women represented 62% and 72% of our first and second samples, respectively.

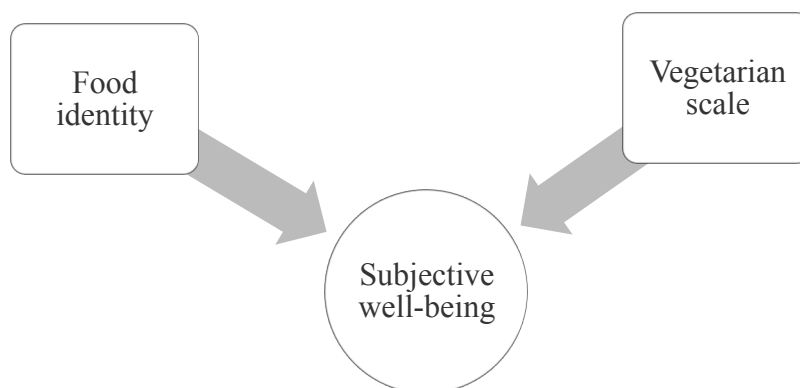
3.2 Variables

First, we proceed to describe the outcome variables of our analysis. For objectives 1 and 2, the dependent variables comprise subjective well-being, operationalized by cognitive well-being or life satisfaction, emotional well-being, and subjective vitality (Guillen-Royo, 2019). The explanatory variables are vegetarian commitment, measured by food identity and vegetarian self-assessment scale (objectives 1 and 2), connectedness to nature, interactions of vegetarians and connectedness to nature variable (objective 2), and a set of control variables (see Figures 6 and 7). As for objective 3, the predicted variables enclose consistency and intention to continue with meatless diet within the scenario of 1-2 years that both constitute the compound of vegetarian adherence (see Figure 8), where the explanatory variables are pro-environmental behaviour, connectedness to nature, and political orientation, controlling for perceived convenience, dietary motivations, food identity, and a set of socio-demographic variables. Furthermore, we detail the control and socio-demographic variables employed in our samples.

Objective 1 relates to the relationship of vegetarian commitment (independent variable), enclosing food identity and vegetarian self-assessment scale, with subjective well-being (dependent variable), measured in life satisfaction, emotional well-being, and vitality (see Figure 6).

Figure 6

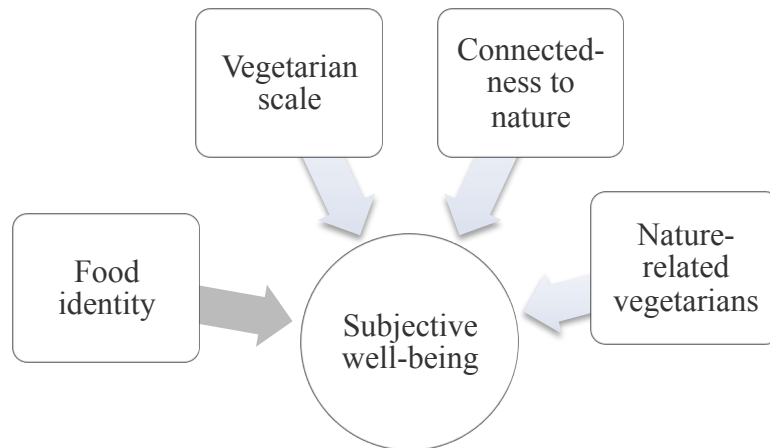
Conceptualization of objective 1



Objective 2 focuses on the role that connectedness to nature (independent variable) performs on the link between vegetarian commitment and subjective well-being accounting for the interactions of vegetarians and connectedness to nature via nature-related vegetarians variable (see Figure 7).

Figure 7

Conceptualization of objective 2



Objective 3 examines the influence of predictive and mediatory role of pro-environmental behaviour on vegetarian adherence (outcome variable), operationalized by consistency and intention to continue with meat-reduced diet, accounting for connectedness to nature, political orientation, and a set of control variables comprising food identity, dietary motivations, and perceived convenience of vegetarians and flexitarians (see Figures 8a and 8b).

Figure 8a

Conceptualization of objective 3: predictive role of pro-environmental behaviour

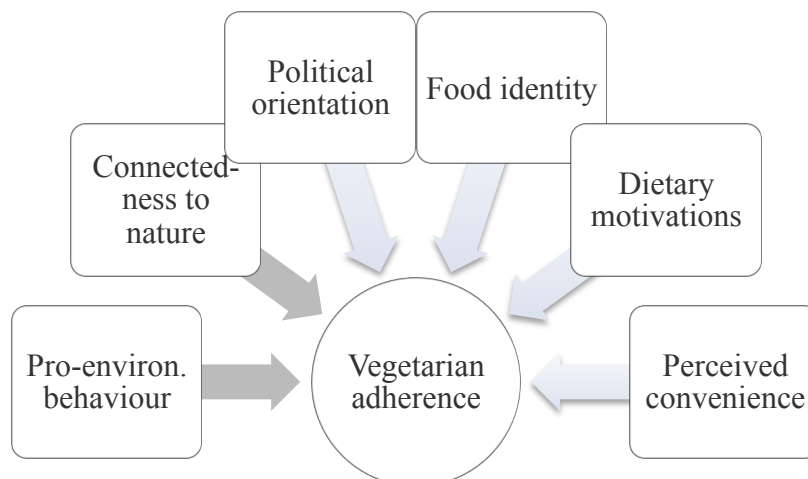
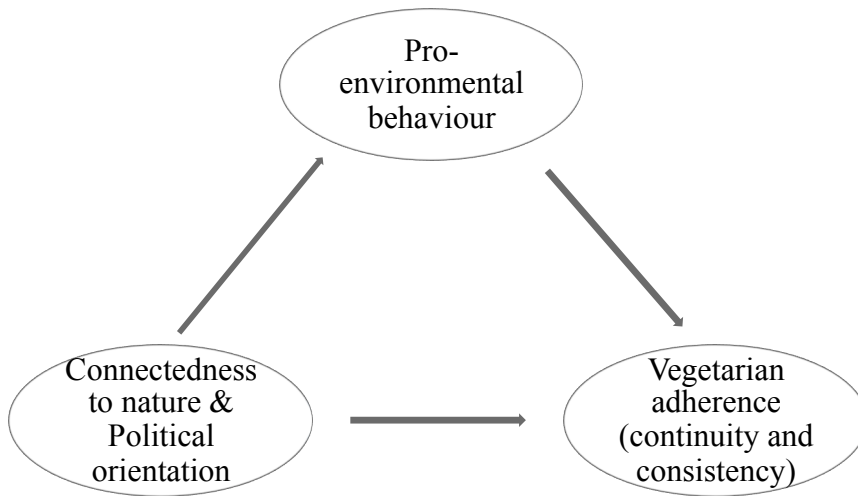


Figure 8b

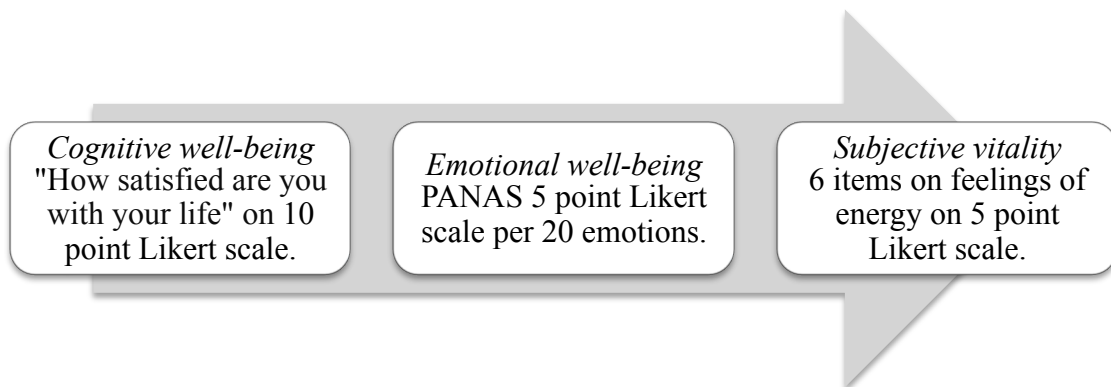
Conceptualization of objective 3: mediatory role of pro-environmental behaviour



In the following lines, first, we proceed to define the outcome variable subjective well-being that includes measures for life satisfaction, emotional well-being, and subjective vitality (see Figure 9).

Figure 9

Measures employed for levels of subjective well-being



Life satisfaction

The first measure for subjective well-being is life satisfaction or cognitive well-being and is related to the cognitive assessments and judgements people make about their life when they think about it (Dolan, Peasgood & White, 2008). We measure the variable of life satisfaction asking participants the question “How satisfied are you at this moment

with your life as a whole?” Survey respondents answered the question using a Likert scale of 10 points ranging from 1 ‘completely dissatisfied’ to 10 ‘completely satisfied’.

Emotional well-being

The second measure comprises emotional well-being or affection and refers to the affective component of subjective well-being. We use the Positive and Negative Affect Schedule (PANAS) proposed by Watson and colleagues (1988), which is composed of 20 items describing different feelings and emotions, 10 positive affections (motivated, alert, excited, inspired, strong, determined, attentive, enthusiastic, active, proud) and 10 negative affections (irritable, annoyed or upset, embarrassed, angry, nervous, guilty, fearful, aggressive, restless, insecure). For each item, the participants responded as to how they had felt that emotion during the last seven days using a 5-point Likert scale from 0 ‘very slightly or nothing’ to 5 ‘extremely’. The variable of affection is calculated as the difference between the sum of the positive affection scores and the sum of the negative affection scores.

Subjective vitality

The third measure for subjective well-being constitutes the subjective vitality that reflects the eudaimonic dimension of well-being. Subjective vitality can be defined as the conscious experience of possessing energy and vivacity (Ryan & Frederick, 1997), and is considered an aspect of eudaimonic well-being because it is part of being in full psychological and physical functioning (Guillen-Royo, 2019). We calculated the variable vitality as the arithmetic mean of the scores given to six statements related to feelings of vitality. The answers to each statement are evaluated on a 5-point scale from ‘totally false’ to ‘extremely true’ in terms of how they generally ‘apply to you’.

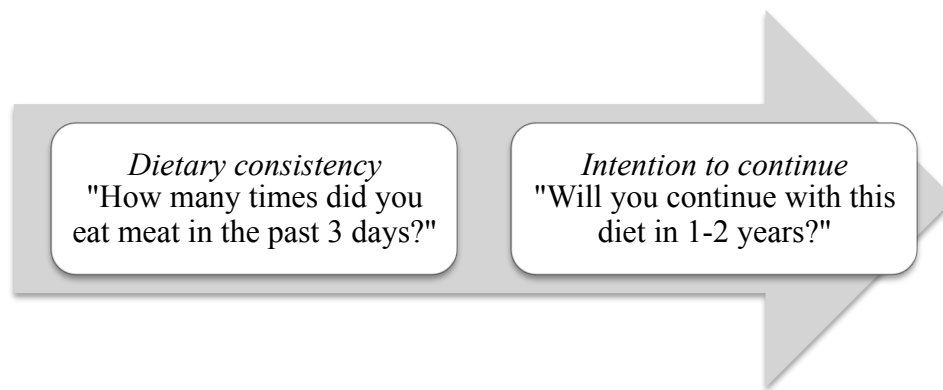
These six items concerning perceptions of experiencing energy and feelings of aliveness are designed according to Ryan and Frederick’s (1997) measure for subjective vitality: 1. I feel alive and vital. 2. Sometimes I am so alive I just want to burst. 3. I have energy and spirit 4. I look forward to each new day. 5. I nearly always feel awake and alert. 6. I feel energized (Bostic, Rubio & Hood, 2000). The aforementioned statements define the

tool that reports a phenomenological sense of aliveness and energy, and once summed describe accordingly the variable of subjective vitality (Ryan & Frederick, 1997).

Second, we proceed to specify the outcome variable vegetarian adherence that encloses the current dietary consistency and the intention to continue with a meat-reduced diet in 1-2 years (see Figure 10).

Figure 10

Measures employed for short and long-term vegetarian adherence



Dietary consistency with meat avoidance

We measured dietary consistency by asking participants to indicate their meat consumption in figures “In the past 3 days, how many times did you eat red and white meats (pork, chicken, beef, meat products such as ham, jelly, hamburgers, etc.)?” In this case, we followed the measure of dietary strictness employed previously by Allen and colleagues (2000) approaching a 3-day period optimized to reduce floor effects and make accurate counts.

Intention to continue with meat-reduced diet

The attitude towards continuity with meat-reduced diet was directed to flexitarian, vegetarian, and vegan profiles via intentional question “Will you continue this diet with a reduced consumption of meat and meat products in the near future (1-2 years)?” The participants could answer ‘yes’ and ‘no’.

The following paragraphs are destined to describe the independent variables of our analysis. For objectives 1 and 2 we designed the measure for vegetarian commitment

through the means of food identity (psychological aspect) and vegetarian self-assessment scale (actual behaviour).

Food identity

Previous research suggests working with a gradual approach when measuring for vegetarian identity since the process of vegetarian identity development advances with a progressive plant-based consumption going through phases of omnivore, conscientious omnivore, flexitarian, lacto-pesco vegetarian, lacto-ovo vegetarian, and vegan (Fox & Ward, 2008; de Bakker & Dagevos, 2012; Rothgerber, 2015). To assess the vegetarian commitment, we work with the covariate food identity that specifies how people consider themselves in relation to the diet they follow. People were asked “Please select the option that best describes your diet” and they could choose answer modalities that were gradually ordered considering meat restrictiveness from least to most restrictive: omnivore, organic omnivore, flexitarian, lacto-pesco vegetarian, lacto-ovo vegetarian, and vegan. Adjective identification was followed by a short description for each dietary pattern: a. Omnivorous: eats meat and its derivatives, fish and seafood, as well as fruits, vegetables, and cereals. b. Organic omnivore: buys organic meat. c. Flexitarian: does not eat meat at least once a week. d. Lacto-pesco vegetarian: eats dairy products, fish and seafood, but does not eat meat. e. Lacto-ovo vegetarian: eats eggs and dairy products but does not eat fish, seafood, white, or red meats. f. Vegan: Eat fruits, vegetables, legumes, and cereals but does not eat red or white meats, dairy products, eggs, seafood, and fish. This measure was also employed in previous works when inquiring about the vegetarian food identity (Allen et al., 2000; Lea, Crawford & Worsley, 2006).

In our work, we expanded Allen’s (2000) definitions by adding ‘organic omnivore’ (quality restriction in meat intake) and ‘flexitarian’ (quantity restriction in meat intake) given their growing popularity (de Bakker & Dagevos, 2012; Rothgerber, 2015; Rosenfeld, 2018) and we excluded less common vegetarian profiles such as fruitarian, lacto-vegetarian, ovo-vegetarian (IVU, 2020) to avoid reduced and less representative cohorts.

Vegetarian self-assessment scale

In order to guarantee a higher reliability of the self-reported vegetarian food identity, we took account of the self-reported vegetarian dietary pattern. This measure refers to vegetarian self-assessment scale, which uses the diet preference 10-point bipolar adjective scale before addressing the identification as a vegetarian (Lea, Crawford & Worsley, 2006). People were asked “Please indicate on the scale from 1 to 10 your eating habits, from omnivorous to vegan, where 1 means to be completely omnivorous (eats all products of animal origin) and 10 completely vegan (eats no products of animal origin)”.

When controlling for the covariate food identity in objective 3, we combined the stricter vegetarian identities, namely lacto-pesco vegetarians, lacto-ovo vegetarians, and vegans, within the same category group under the label *vegetarians* in order to refer to all participants who fully excluded meat products from their diets. Therefore, we identified for objective 3 two dietary groups, vegetarians and flexitarians. This practice permits us identifying two levels of meat-avoiders: (1) flexitarians, who limit their meat intake partially, and (2) vegetarians, who exclude meat from their diets entirely (De Backer & Hudders, 2015; Rosenfeld, 2018) and analysing results between dietary identities separately (Forestell, Spaeth & Kane, 2012; Timko, Hormes & Chubski, 2012; Rosenfeld, 2018).

Connectedness to nature

Personal relationship with environment is canalized via a sense of connectedness with nature and other living things (Nisbet, Zelenski & Murphy, 2011). In order to assess people’s connection to nature, we introduced connectedness-to-nature scale designed by Mayer and Frantz (2004). This is a scale comprising 14 items concerning general feelings of participants to assess individuals’ emotional connection to nature: 1. I often feel a sense of oneness with the natural world around me. 2. I think of the natural world as a community to which I belong. 3. I recognize and appreciate the intelligence of other living organisms. 4. I often feel disconnected from nature. 5. When I think of my life, I imagine myself to be part of a larger cyclical process of living. 6. I often feel a kinship with animals and plants. 7. I feel as though I belong to the Earth as equally as it

belongs to me. 8. I have a deep understanding of how my actions affect the natural world. 9. I often feel part of the web of life. 10. I feel that all inhabitants of Earth, human, and nonhuman, share a common 'life force'. 11. Like a tree can be part of a forest, I feel embedded within the broader natural world. 12. When I think of my place on Earth, I consider myself to be a top member of a hierarchy that exists in nature. 13. I often feel like I am only a small part of the natural world around me, and that I am no more important than the grass on the ground or the birds in the trees. 14. My personal welfare is independent of the welfare of the natural world. Participants replied to those items with a Likert 5-point scale, ranging from 1 'strongly disagree' to 5 'strongly agree'. The connectedness to nature scale was calculated averaging the score of all items, reverse scoring where appropriate.

Pro-environmental behaviour

Since our work also studies the environmental aspect of pro-collective well-being, we accounted for the personal relationship with the environment via engagement in pro-environmental activities. In our fieldwork, we assessed 16 items as pro-environmental practices adapted from previous research of UKHLS household panel data for Great Britain (Binder & Blankenberg, 2017; Binder, Blankenberg & Guardiola, 2020). We asked participants to indicate on the 5-point Likert scale from 1 'very little or nothing' to 5 'extremely' how often they perform the following activities: 1. Switch off lights in rooms that are not being used. 2. Put more clothes on when you feel cold rather than putting the heating on or turning it up. 3. Decide not to buy something because it has too much packaging. 4. Buy recycled paper products such as toilet paper or tissues. 5. Take your own shopping bag when shopping. 6. Separate the garbage (for example, paper, plastic, and glass). 7. Use public transport (e.g. bus, train) rather than travel by car. 8. Walk or cycle for short journeys (up to 3 - 4 km). 9. Take fewer flights when possible. 10. Participate in demonstrations in support for the environment. 11. Reduce consumption of meat or animal products. 12. Buy organic or eco-labelled food. 13. Buy organic or eco-labelled products (furniture, clothing). 14. Prefer to buy local products. 15. Throw food in the food banks. 16. In general, try reducing consumption in everyday life. The pro-environmental behaviour was calculated averaging the score of all items.

Political orientation

In order to know participant's political orientation, we asked respondents to answer the question "Are you more of a left-wing person, right-wing person, or neither?" Respondents could choose on a 10-point Likert scale from 1 'extremely left' to 10 'extremely right'.

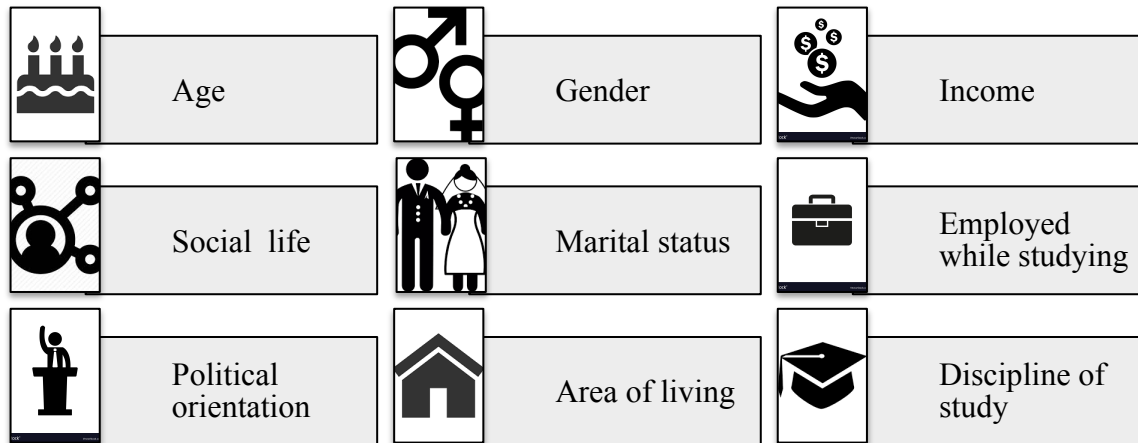
Control variables

As for objectives 1 and 2, we introduced a set of control variables (see Figure 11) to accompany the previous variables in the regressions. The participants indicated their parents' monthly income by selecting one of the eight intervals given as an option, with the lowest category being less than €499 and the highest €5000 or more. We estimated the income for each category using the midpoint of the interval (except in the case of the top category, where we estimated it at €6000). We calculate income per capita dividing it by the number of people living in the household. In the analysis we included the natural logarithm of these incomes.

In addition, we considered the age in years specified by respondents, as well as its quadratic term. Respondents indicated their gender by selecting male, female, or other. We included a dummy variable indicating if the respondent is female in the regressions. We also considered a dummy variable if the respondent has no partner, and a variable accounting for the social life or relational aspect of the respondents. In this line, participants were asked about the frequency with which they are in touch with their relatives, friends, and neighbours on a scale from 1 'never' to 5 'every day or almost every day'. We calculate the variable of relations as the average of the scores obtained in three items, namely family, friends, and neighbours. Also, participants specified if they work or not, and the area where they live: a rural area or village (1), an urban area near a city (2), or in a city (3). They also reported on their political orientation previously specified. We also controlled for the discipline of study, which was grouped in the following categories: economics, politics, pedagogy, environment, sociology, engineering, medicine, social work, and information technology.

Figure 11

Set of control variables for objectives 1 and 2



Regarding control variables employed for analysis of objective 3, we analysed participants' socio-demographic characteristics such as age, gender, and parents' monthly income and we also controlled for dietary motivations and perceived convenience of vegetarians and flexitarians. As convenience to access meatless food can become an important barrier for vegetarian adherence (Lea, Crawford & Worsley, 2006; Schösler, De Boer & Boersema, 2012), we measured the aspects of perceived convenience of vegetarian diets by asking meat reducers to indicate if they considered easy to find and prepare meat-reduced foods. The answer options were 'yes' or 'no'.

Furthermore, since objective 3 aims to allocate the unique predictive value of the environmental commitment, we also considered motivations that drove participants (flexitarian, vegetarian, or vegan identities) to adopt meat-reduced diets. We accounted for several specific motives based on health, social influence, price, taste, spiritual reasons, animal rights, ethics, environment, and social injustice (Ruby, 2012; Rosenfeld, 2018). These were consequently grouped into more general motivational categories (in italics) with their item(s) in parentheses and quotations: *animal* ("I follow this diet to defend animal rights," "I follow this diet because I want to boycott the big meat industry"), *health* ("I follow this diet for health reasons," "I follow this diet because I want to cleanse my body," "I follow this diet because I want to lose weight"), *social* ("My friends also follow this diet," "I follow this diet for my family."), and *taste* ("I follow this diet because I don't like the taste of meat"). Participants could answer to statements 'yes' and 'no'. For motivations that were assessed by multiple items,

participants were classified as having that motivation if they responded 'yes' to any of the items.

3.3 Hypotheses

The aim of this research is to examine some individual and collective aspects of the relationship between vegetarianism and well-being, and also its short-term consistency and long-term continuity from the perspective of Spanish meat avoiders. For that purpose, we articulated three specific objectives of our work. First, we study the link between people self-identified as vegetarians and individuals who rate high on a vegetarian scale and their levels of subjective well-being, measured in life satisfaction, emotional well-being, and subjective vitality, and compare those results with the current levels of happiness of omnivores. Second, we analyse the role nature connectedness plays on the relationship between being vegetarian and subjective well-being.

Third, we explore the influence of pro-environmental behaviour on short and long-term vegetarian adherence, measured in dietary consistency and intention to continue with a meatless diet, respectively, in relation to nature connectedness and political orientation of vegetarians and flexitarians. More specifically, we focus on the predictive role of pro-environmental behaviour on adherence to vegetarian diets, and on the mediatory function of pro-environmental behaviour on dietary adherence in relation to nature connectedness and political orientation. Therefore, we articulate the following hypotheses.

Given the wide evidence that reports a negative tendency on the link of vegetarian identity with subjective well-being (Michalak, Zhang & Jacobi, 2012; MacInnis & Hodson, 2017; Forestell & Nezlek, 2018; Lavalley et al., 2019), we suspect that similar results will be attained among Spanish vegetarians (H1.1). Since vegetarianism associates in different directions within psychological and physical wellness, we estimate that our results will suffer nuances according to the measure of subjective well-being under consideration (H1.2). For example, evidence identified reduced emotional well-being in vegetarians (e.g. Agarwal et al., 2015; Forestell & Nezlek, 2018), increased vitality (e.g. Conner et al., 2017), increased life satisfaction (e.g. Mujcic &

Oswald, 2016) but also reduced life satisfaction (e.g. Remick, Pliner & McLean, 2009). See section 2.3.1.2 for further evidence.

Considering that vegetarians establish a stronger link with human interconnectedness to nature by adopting more reflexive vegetarian identity (Twigg 1979; Beardsworth & Keil, 1992; Fox, 2000) and that connectedness to nature simultaneously influences positively on the states of individual happiness (Mayer and Frantz, 2004), we estimate that nature relatedness could moderate the relation with subjective well-being (H2) to the extent that a higher connectedness to nature would explain why vegetarians who feel more connected to nature are happier than vegetarians who feel more disconnected or their omnivore counterparts. For more information see section 2.3.3.

Hypothesis 1: We expect a negative relationship between vegetarian commitment, measured in food identity and vegetarian scale, and subjective well-being.

- H1.1: We consider that the greater the vegetarian commitment (in terms of vegetarian scale and food identity), the lower the subjective well-being will be.
- H1.2: The relationship between being vegetarian and subjective well-being will differ depending on the happiness indicator under consideration.

Hypothesis 2: Connectedness to nature moderates the relationship between vegetarianism and subjective well-being.

Extensive research found positive links between vegetarianism, connectedness to nature, and pro-environmental behaviour (Twigg 1979; Beardsworth & Keil 1992; Fox 2000; Clayton 2003; Fox & Ward 2008). Furthermore, feeling connected to nature may encourage individuals to value engagement in pro-environmental behaviour (Schultz, 2002; Mayer & Frantz, 2004; Nisbet, Zelenski & Murphy, 2009; Hohle, 2014). Also, evidence reports the predictive role of the belief that vegetarianism benefits the environment on following a vegetarian diet (Kalof et al., 1999). More information on this is included in section 2.4.

As a result, we estimate that pro-environmental behaviour may predict positively vegetarian adherence (H3). In addition, we hypothesize that pro-environmental behaviour likely serves to mediate the link between connectedness to nature and adherence to vegetarian diets (H3.1). Furthermore, research relates political ideology and vegetarian dieting (Rosenfeld, 2018). More specifically, conservatives are less likely to adhere to vegetarian diets successfully (Črnič, 2013; Hodson & Earle, 2018; Rosenfeld & Tomiyama, 2020). We estimate hence that if pro-environmental behaviour uniquely predicts adherence to vegetarian diets, then it may mediate the link between political ideology and adherence (H3.2), given the clear ties between political ideology and environmental attitudes.

Hypothesis 3: We estimate that pro-environmental behaviour is a positive predictor for vegetarian adherence, measured in current dietary consistency and future intention to continue with meatless diet.

- H3.1: We hypothesize that pro-environmental behaviour mediates the relationship between connectedness to nature and vegetarian adherence.
- H3.2: We hypothesize that pro-environmental behaviour mediates the link between political orientation and vegetarian adherence.

A novel contribution and strength of our research relies on the interconnectedness of vegetarianism with the aspects of individual and collective well-being. More specifically, we consider the positive influence of connectedness to nature on subjective well-being of self-identified vegetarians and individuals who rate high on a vegetarian scale and also distinguish between short-term dietary adherence (consistency) and intention for long-term adherence moderated by pro-environmental behaviour (see Figures 12a and 12b). A broader aim of this research is to identify factors that could enhance vegetarian subjective well-being as well as to allocate agents that promote adherence to vegetarian diets over time, knowledge, which can ultimately be useful for building happier and more sustainable societies. If connectedness to nature and pro-environmental behaviour exhibit unique ties to subjective well-being and adherence, respectively, then a promising next step for encouraging vegetarian lifestyles would be to develop and implement policy interventions that cultivate these feelings in individuals.

Figure 12a

Interconnectedness of vegetarianism with individual and collective well-being

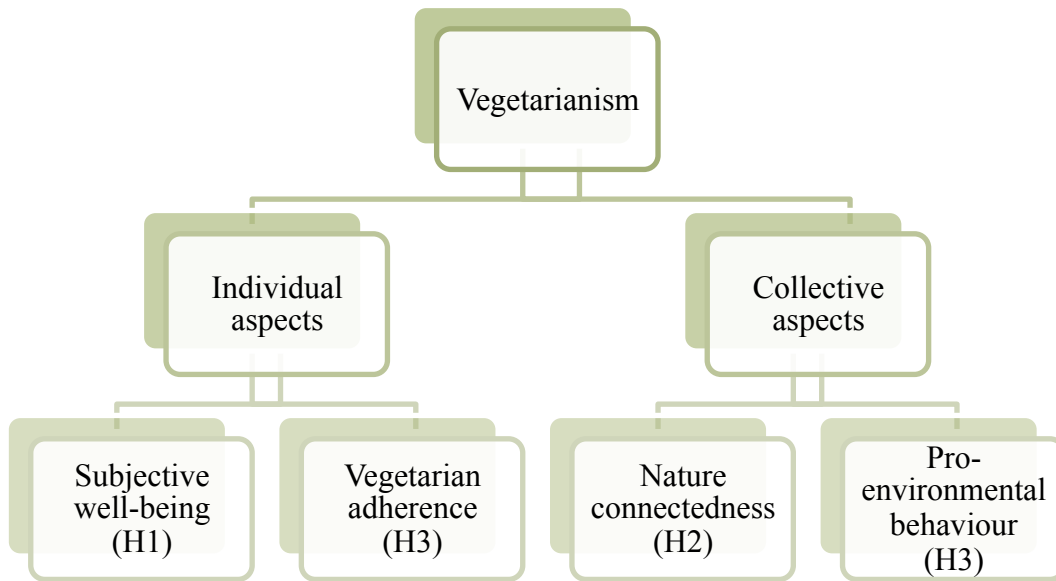
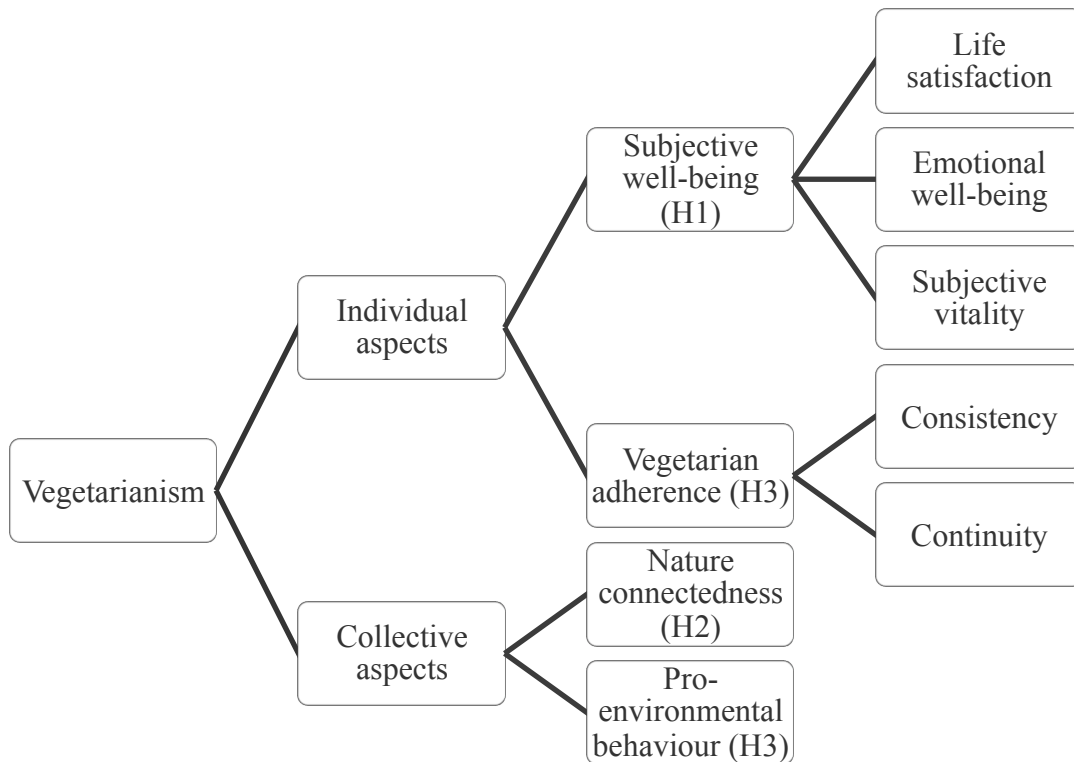


Figure 12b

Interconnectedness of vegetarianism with individual and collective well-being (detailed)



3.4 Methods of analysis

We employed several methods of analysis in order to test our formulated hypotheses. As for descriptive statistics, before the estimations we used Pearson coefficient of variation (CV) that measures data dispersion in relation to the mean (expressed in percentage and defined as the ratio of the standard deviation to the mean) in order to analyse the homogeneity of our data. Then, first we examined the relationship between vegetarianism, connectedness to nature, and subjective well-being and contrasted the hypotheses 1 and 2 with a linear regression analysis using the method of ordinary least squares and specified different model designs (for each dimension of well-being: life satisfaction, emotional well-being, and subjective vitality) controlling for vegetarian identity and other covariates. Data analysis was performed using Stata15 statistical software.

Second, for the hypothesis 3, in order to analyse which factors predict intention to continue a meat-reduced diet in the near future (1-2 years) and the level of participants' meat avoidance in the past three days, we conducted hierarchical logistic and ordinary least squares regressions, respectively, controlling for participants' food identity as flexitarian versus vegetarian. In addition to regression models and in order to contrast our hypotheses 3.1 and 3.2, we conducted mediatory analyses identifying pro-environmental behaviour as the mediatory agent for the relation of connectedness to nature and/or political orientation with vegetarian adherence. Data analysis was performed using R statistical software.

3.4.1 Ordinary least squares

Multiple linear regression models are appropriate when we need to identify the relationship of a dependent variable in association with two or more independent variables. In consequence, they are the extension of ordinary least squares method referring to several variables (Gujarati & Porter, 2009). In our analysis, we conducted an ordinary least squares regression analysis to contrast hypotheses 1 and 2, a method that allows to determine both the nature and strength of the relationship between the variables, estimating the value of the parameters (partial regression coefficients). These

parameters measure the change in the dependent variable when we perform a unitary change in the explanatory variable controlling for other independent variables and by minimizing the sum of squared errors of the data (Gujarati & Porter, 2009). This is the most suitable method for the variables emotional well-being and subjective vitality, since those are quantitative variables.

However, we acknowledge the difference between a regression model, in which the dependent variable is quantitative and a model, in which the outcome variable is qualitative. To estimate the outcome variable that is quantitative in nature, we consider the values of the regressors that can be quantitative or qualitative, but if the dependent variable is qualitative, the goal is to find the probability that a certain event will happen. Therefore, regression models with qualitative responses are often referred to as probability models (Gujarati & Porter, 2009). In this line, given the ordinal nature of the categorical variable life satisfaction, it would be more appropriate to use an ordered probit model. However, we applied ordinary least squares regression because its interpretation is simpler and the results obtained by both methods are very similar (Ferrer-i-Carbonell & Frijters, 2004). In any case, for greater evidence, we repeated the analyses referring to life satisfaction using ordered probit and logit models, arriving to similar results and conclusions. Those results are included in annex 3.

Linear regression models were previously employed in similar studies relating connectedness to nature, pro-environmental behaviour, and levels of well-being (Martin et al., 2020), linking vegetarianism and subjective well-being (Blanchflower, Oswald & Stewart-Brown, 2013) via ordinary least square methods (e.g. Schenk et al., 2018). Therefore, in order to contrast hypotheses 1 and 2, we designed 8 series of ordinary least squares regression models for each regressand of subjective well-being (life satisfaction, emotional well-being, and subjective vitality) and its related explanatory variables, namely vegetarian scale, food identity, connectedness-to-nature scale, the interactions of vegetarians and connectedness to nature, and a set of control variables.

In the first model of the ordinary least squares regressions, we regressed each measure of subjective well-being on the set of control variables (age, gender, parents' income, social life, marital status, work status, political orientation, area of residence, and discipline of study), which are the same for the remaining models. In the second model, we added the regressor vegetarian scale to the control variables. In the third model, we

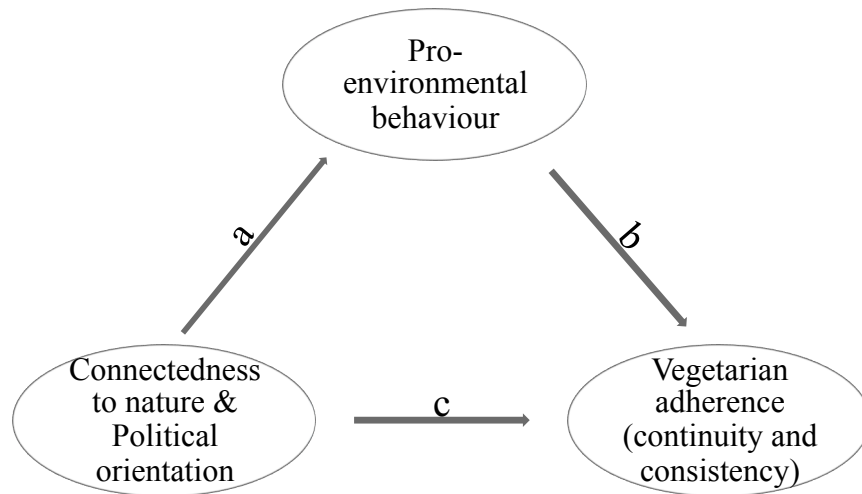
regressed subjective well-being on each food identity (omnivore, organic omnivore, flexitarian, lacto-pesco vegetarian, lacto-ovo vegetarian, and vegan). In the fourth model, we added the covariate connectedness to nature. In the fifth model, we included connectedness to nature controlling for the variable vegetarian scale. In the sixth model, we introduced nature connectedness controlling for the variables vegetarian scale and the interaction of vegetarians connected to nature. In the seventh model, we examined the correlation of our outcome variable in association to connectedness to nature controlling for each food identity. And finally, in the eighth model, we added the covariate vegetarian identity connected to nature controlling for the variables connectedness to nature and food identity.

3.4.2. Regression and mediation analyses

To analyse vegetarian adherence, first, we examined intention to continue with a meat-reduced diet and, second, we proceeded to study dietary consistency. Regarding the intention to continue with a meat-reduced diet (dichotomous outcome of intention to continue with the diet 'yes' or 'no'), first, we conducted a hierarchical logistic regression (Gujarati & Porter, 2009) to contrast the hypothesis 3.1 (e.g. Meesters et al., 2016 also employed logistic regression in their vegetarian sample). Second, we conducted hierarchical ordinary least squares regression analysis to contrast the hypothesis 3.2 (continuous variable of pro-environmental behaviour). Finally, we conducted the mediation analyses (Judd & Kenny, 1981; Baron & Kenny, 1986) for the hypothesis 3 once pro-environmental behaviour was confirmed to predict positively vegetarian adherence in order to test the causal role of pro-environmental behaviour on the connectedness to nature and/or political orientation as for vegetarian adherence (see Figure 13).

Figure 13

Planned mediation analyses to allocate the mediator agent for vegetarian adherence



Mediation models were applied in previous works to identify significant mediators in relation to vegetarian adherence (Rothgerber, 2015; Hodson & Earle, 2018). According to several scholars, a mediation analysis is appropriate when we can establish a priori a causal relation. Therefore, we followed the instructions on mediation analyses by Kenny and colleagues (Judd & Kenny, 1981; Baron & Kenny, 1986) and established that the presumed causal model is that pro-environmental behaviour mediates the relationship of connectedness to nature and/or political orientation with vegetarian adherence. To test for mediation, we estimated three regressions equations. In the first step, we regressed the criterion variable vegetarian adherence (continuity and consistency) on the independent variable (connectedness to nature and political orientation) (Figure 13 - path *c*). Once we found there is an effect to be mediated, we continued with the second step and regressed the mediator (pro-environmental behaviour) as a dependent variable on the independent variable (nature connectedness or political orientation) (Figure 13 - path *a*). In the third step, we tested that the mediator (pro-environmental behaviour) influences the outcome variable controlling for the independent variable and, hence, we regressed vegetarian adherence as the criterion variable on pro-environmental behaviour (mediator) controlling for the independent variable connectedness to nature and/or political orientation (Figure 13 - path *b*). Also, we studied if the mediatory agent mediates the relationship between independent and dependent variable completely or partially. Therefore, when paths *a* and *b* are controlled, a previously significant relation

between the independent and dependent variables (path c) is no longer significant, which means Path c equals zero and we have a perfect mediation. However, if the residual Path c is not zero and is lower than the effect in the first regression, then we have a partial mediation with multiple mediating factors, which is common especially in the area of psychology that relates to several causes (Baron & Kenny, 1986).

3.4.2.1 Intention to continue with meat-reduced diet

Before attempting the mediation analyses, first, we applied a hierarchical logistic regression to test which factors predict intention to continue a meat-reduced diet in the near future scenario of 1-2 years (H3). In all steps, we controlled for participants' food identity as flexitarian versus vegetarian in order to isolate the unique predictive value of psychological factors. This was performed to take into consideration possible differences between flexitarian and vegetarian identities that could differ as for their intention to continue with a meat-reduced diet. In the first step of the hierarchical logistic regression, we regressed intention to continue the meatless diet on the environmental commitment variables, accounting for pro-environmental behaviour and connectedness to nature. In the second step, we added previously standardized dietary motivations (animal, health, social, and taste) and perceived convenience to follow the meat-reduced diet into the model as to test the unique predictive value of the environmental commitment. Finally, in the third step, we added a set of demographic variables comprising age, gender, and parents' income into the model.

According to specifications of Baron and Kenny (1986), in our mediation analyses, we assigned the mediator function of a third variable to pro-environmental behaviour that represents the generative mechanism (H3.1, H3.2) through which the independent variable under consideration (connectedness to nature and/or political orientation) performs influence on the outcome variable (vegetarian adherence). Since pro-environmental behaviour resulted to be a positive predictor for vegetarian adherence, we proceeded to run the mediation analyses that conceptualize pro-environmental behaviour as a mediator (H3.1, H3.2). We designed two separate mediation models in order to examine if pro-environmental behaviour would explain why feeling more connected to nature and being more politically liberal may predict intention to continue

a meat-reduced diet. We employed ordinary least squares regression analysis when the outcome variable in the model was pro-environmental behaviour (a continuous variable). And we applied logistic regression analysis when the dependent variable was intention to continue a meat-reduced diet (a dichotomous variable). Also, in order to guarantee a higher compatibility of the obtained results, more specifically, to make the model's coefficients and standard errors comparable across logistic and ordinary least squares regressions in accounting for the indirect effect, we followed Kenny (2008) and Herr's (2013) recommendations for rescaling. When a variable is used as a predictor in logistic regression, it has a different scale from when it is an outcome variable. As a consequence, for the logistic model, we multiplied the predictor's coefficient and standard error by the standard deviation of that predictor and divided by the standard deviation of the outcome variable to make it compatible with ordinary least square regression results (MacKinnon & Dwyer, 1993).

3.4.2.2 Dietary consistency with meat avoidance

Second, we proceeded with the analysis of meat avoidance consistency. For that purpose, we conducted a hierarchical ordinary least squares regression to examine which factors would predict dietary consistency with meat avoidance that was operationalized as the degree to which participants had avoided meat in the past three days prior to survey. As with the analysis of intention to continue with the meat-reduced diet, we controlled for participants' food identity as flexitarian versus vegetarian in all steps in order to isolate the unique predictive value of psychological factors. This was performed to take into consideration possible differences between flexitarian and vegetarian identities that could differ as for their dietary consistency.

In the first step of the hierarchical regression, we regressed the dietary consistency with meat-reduced diet on the environmental commitment variables, accounting for pro-environmental behaviour and connectedness to nature. In the second step, we added dietary motivations (animal, health, social, and taste) and perceived convenience to follow the meat-reduced diet into the model to test the unique predictive value of the environmental commitment. Finally, in the third step, we added a set of demographic variables comprising age, gender, and parents' income into the model.

As for the mediation analyses, since pro-environmental behaviour also resulted to be a positive predictor for dietary consistency with meat-reduced diet in the past three days, we proceeded to conduct the mediation analyses that conceptualize pro-environmental behaviour as the mediator (H3.1, H3.2). As with the intention to continue with the meat-reduced diet, we designed two separate mediation models in order to examine if pro-environmental behaviour would explain why feeling more connected to nature and being more politically liberal may predict higher meat avoidance consistency. Also, in each model, we controlled for the covariate food identity (vegetarian versus flexitarian) to identify the unique explanatory role of pro-environmental behaviour, given that one's personal identity, as vegetarian over flexitarian, would lead to higher levels in dietary consistency with meat avoidance.

4. Descriptive statistics and results

This chapter is divided in two main sections, descriptive statistics (4.1) and results from estimations (4.2). In section 4.1 we present the descriptive statistics relating subjective well-being and vegetarian commitment (4.1.1), environmental commitment and food identity (4.1.2), political orientation and vegetarian commitment (4.1.3), and control variables (4.1.4) that were employed in our analyses. In section 4.2 we present our results in relation to the formulated hypotheses. First, we analyse results regarding vegetarianism, subjective well-being, and connectedness to nature that associate with hypotheses 1 and 2 (4.2.1). Second, we describe obtained results from our regressions to contrast hypothesis 3 linked to vegetarian adherence, environmental commitment, and political orientation (4.2.2).

4.1 Descriptive statistics

In this section, first we analyse the relation between the outcome, independent, and control variables under consideration from a general standpoint. Second, we describe subjective well-being variables, assessed as life satisfaction, emotional well-being, and subjective vitality, in relation to vegetarian commitment variables (4.1.1), assessed as food identity (4.1.1.1) and vegetarian scale (4.1.1.2). Third, we describe environmental commitment variables (4.1.2) measured as nature connectedness and pro-environmental behaviour in relation to food identity (4.1.2.1 and 4.1.2.3, respectively) and we also extend this link adding subjective well-being (4.1.2.2) and meat consumption with political wing (4.1.2.4). Fourth, we analyse some aspects of political orientation in relation to vegetarian commitment (4.1.3). Finally, we study a set of control variables (4.1.4).

Before we proceed to analyse subjective well-being and environmental commitment variables and their interconnections, first, we show in Table 1 the descriptive statistics of the variables under consideration. The descriptive statistics are shown in some occasions for variables that are used in different samples sizes; therefore, we indicate those variables with 1 and 2. This is because for testing objective 3 and hypothesis 3 we use a sample subset of the general sample (227 observations from a total of 1068 observations). The results reveal that around 8% of interviewees are vegetarians (3%

lacto-pesco vegetarians, 4% lacto-ovo vegetarians, and 1% vegans), and 13% are flexitarians being the vast majority omnivores (77%). We also observe that meat consumption of meat reducers is on average 1.29 units in three days prior to survey, which is equivalent to 4.71 of meatless consistency on a scale from 0 to 6. This translates into that only 33% of meat reducers actually avoid meat intake and, consequently, most of them violate their diet. However, the majority (90%) of meat reducers express their intention to continue meat-reduced diet.

As for environmental commitment variables, accounting for connectedness to nature and pro-environmental behaviour, respectively, we observe there is a moderate difference between the two samples (N=1068 and N=227), in which meat reducers rate higher on both scales than when accounting for all food identities. There are similar average values in parents' income or age between the general sample and the subsample. Regarding the gender, females represent 62% of the first sample and 72% of the second one. Most of the participants are single 64% considering their mean age (21 years) and they mostly dwell in urban environment (67%). In addition, we appreciate a difference between the two samples as for the mean of political wing, in which meat reducers rate lower (3.59) than the sample of all food identities (4.43) despite their overall tendency towards left-wing political orientation. Most of the participants in the sample study economics (43%), while only 26% of the sample works during their studies. As for motivations to adopt meat-reduced diet, most people are triggered by animal motivation (45%), followed by social motivation (27%), health motivation (17%), where taste motivation comes to the last place (11%). Considering convenience of preparing plant-based dishes, the majority of meat reducers in our sample (68%) finds easy to implement them.

Table 1

Descriptive statistics of the variables employed for the hypotheses

Variable	Mean	SD	Min	Max	N
<i>Subjective well-being</i>					
Satisfaction	7.066	1.671	1	10	1068
Affection	8.096	10.99	-25	35	1068
Vitality	3.312	0.739	1	5	1068
<i>Vegetarian adherence</i>					
Meat consumption	1.292	1.206	0	6	227
Meatless consistency scale	4.708	1.206	0	6	227

Meatless consistency	32.60%	-	0	1	227
Intention for continuity	90.31%	-	0	1	227
<i>Environ. commitment</i>					
Connectedness to nature 1	3.312	0.637	1.357	5	1068
Connectedness to nature 2	3.576	0.695	1.357	4.929	227
Pro-environ. behaviour 1	2.908	0.638	1	5	1068
Pro-environ. behaviour 2	3.425	0.617	1.8	4.867	227
<i>Socio-economic variables</i>					
Parents' income 1	1997.2	1343.7	250	6000	1068
Parents' income 2	1940.1	1433.8	250	6000	227
Age 1	20.69	2.847	18	54	1068
Age 1 ²	436.06	150.94	324	2916	1068
Age 2	21.13	3.558	18	46	227
Females 1	62.17%	-	0	1	1068
Females 2	71.95%	-	0	1	227
Single	63.86%	-	0	1	1068
Relations	3.484	0.755	1	5	1068
Work Status	25.47%	-	0	1	1068
Political wing 1	4.427	1.850	1	10	1068
Political wing 2	3.587	1.596	1	10	227
<i>Area of living</i>					
Urban	66.73%	-	0	1	1068
Near a city	17.30%	-	0	1	1068
Rural	15.97%	-	0	1	1068
<i>Area of study</i>					
Economics	43.07%	-	0	1	1068
Pedagogy	13.11%	-	0	1	1068
Social work	9.18%	-	0	1	1068
Politics	8.24%	-	0	1	1068
Sociology	7.30%	-	0	1	1068
Engineering	6.46%	-	0	1	1068
Medicine	6.09%	-	0	1	1068
Other	2.62%	-	0	1	1068
Information technology	2.15%	-	0	1	1068
Environment	1.78%	-	0	1	1068
<i>Vegetarian scale</i>	3.506	2.287	1	10	1068
<i>Vegetarian identity</i>					
Omnivore	76.69%	-	0	1	1068
Organic omniv.	2.06%	-	0	1	1068
Flexitarian	13.01%	-	0	1	1068

Lactopesco	2.90%	-	0	1	1068
Lactoovo	4.31%	-	0	1	1068
Vegan	1.03%	-	0	1	1068
<i>Motivations of meat</i>					
<i>reducers</i>					
Health	16.74%	-	0	1	227
Social	27.31%	-	0	1	227
Taste	10.57%	-	0	1	227
Animal	45.37%	-	0	1	227
<i>Convenience</i>	68.18%	-	0	1	227

Descriptive statistics of dependent, independent, and control variables employed for our estimations. Table provides mean values, standard deviation (SD), intervals' minimum and maximum, and count (N). We differentiate between sample 1 (N=1068) and sample 2 (N=227) according to their link to hypotheses 1 and 2 (N=1068) or hypothesis 3 (N=227).

4.1.1 Subjective well-being

In this section we refer to the descriptive statistics of subjective well-being variables, measured as life satisfaction, emotional well-being, and subjective vitality, in relation to vegetarian commitment variables, accounting for food identity and vegetarian scale, respectively that will lead us to test our hypothesis 1.

4.1.1.1 Subjective well-being and food identity

Through the means of boxplots we analyse six groups of variables according to food identity categorization and observe the median value and distribution of the scores on the pre-established scales to measure subjective well-being variables (see Figures 14, 15, and 16). In Figures 14, 15, and 16 we observe that the vegan identity scores are higher than any other food identity scores considering all three measures of subjective well-being, which translates into that strict vegetarian dieters have higher median values in life satisfaction, emotional well-being, and subjective vitality than meat eaters and reducers. As for life satisfaction (see Figure 14), vegans and lacto-pesco vegetarians present larger interquartile ranges with less condensed values.

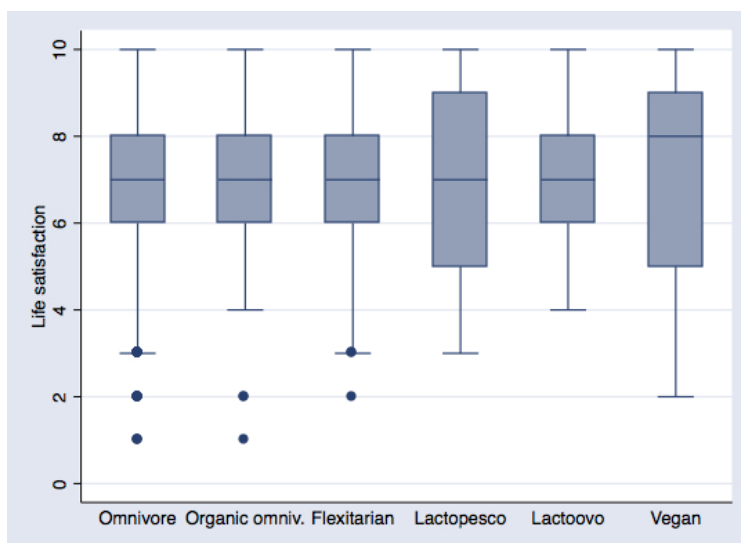
Also, the outliers fall below the first-quartile values in the case of meat eaters (omnivore, organic omnivore, and flexitarian). As for emotional well-being (see Figure

15), not only the distribution of the scores is not even but also the interquartile ranges. This heterogeneity in medians is accompanied by outliers in the case of omnivores and lacto-ovo vegetarians that fall below the minimum values. Interesting to note is that lacto-pesco vegetarians present the lowest median value in affection than any other food identity. We perceive similar tendency in subjective vitality as for heterogeneity in medians and interquartile ranges (see Figure 16). Here, omnivores present higher values of vitality than other food identities except for vegans who score even higher. The outliers fall below minimum in the case of omnivores and above maximum for flexitarians and lacto-ovo vegetarians.

In addition, we present tables 2.1, 2.2, and 2.3 to detail the information contained in Figures 14, 15, and 16 with mean value, numeric median, standard deviation, minimum and maximum of employed scales, Pearson coefficient of variation (CV), and number of observations. As for life satisfaction, Table 2.1 shows the mean of satisfaction scale from 1 to 10 per each food identity that goes from omnivore to vegan. We observe that vegans obtain the highest score, followed by omnivores and lacto-ovo vegetarians. Organic omnivore is the least satisfied food identity. Overall, the homogeneity of the data is good ($24\% < 80\%$), which translates into that the data mean can be considered as representative. As regards emotional well-being or affection (see Table 2.2), vegans obtain the highest score followed by flexitarians and omnivores. Analysing subjective vitality (see Table 2.3), vegans perceive the highest vitality, followed by omnivores and flexitarians. Overall, the homogeneity of the vitality data is good ($CV=22\%$ that is below 80%). Lacto-pesco vegetarians obtain the lowest rates on the affection and vitality scales (see Table 2.2 and 2.3).

Figure 14

Life satisfaction per food identity

**Table 2.1**

Descriptive statistics of life satisfaction per food identity

Satisfaction	Mean	SD	p50	Min	Max	CV	N
Omnivore	7.124	1.665	7	1	10	23.38%	819
Organic omniv.	6.455	2.324	7	1	10	36.01%	22
Flexitarian	6.878	1.431	7	2	10	20.80%	139
Lactopesco	6.645	2.199	7	3	10	33.10%	31
Lactoovo	7.022	1.325	7	4	10	18.87%	46
Vegan	7.273	2.453	8	2	10	33.73%	11
Total	7.063	1.670	7	1	10	23.65%	1068

Life satisfaction per each food identity. Table provides mean values, standard deviation (SD), median (p50), intervals' minimum and maximum, Pearson coefficient of variation (CV), and count (N).

Figure 15

Emotional well-being per food identity

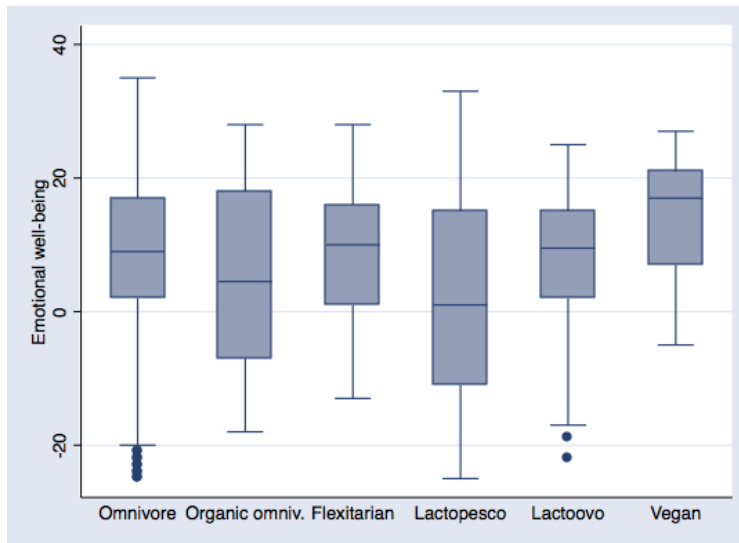


Table 2.2

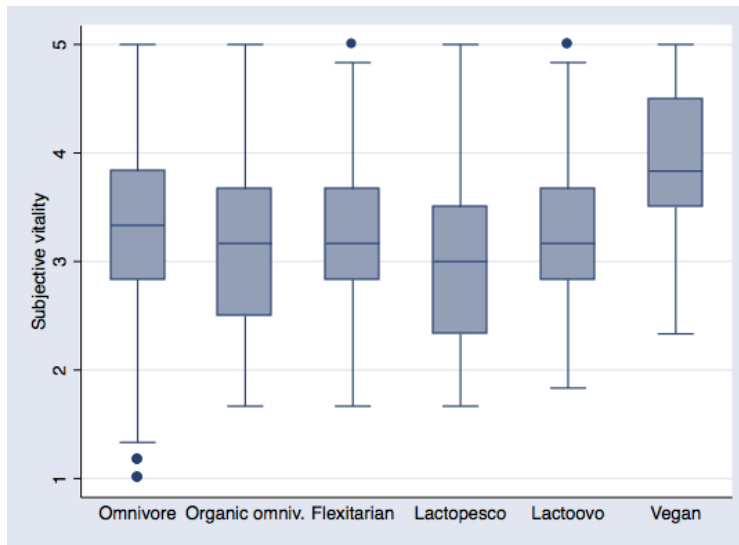
Descriptive statistics of affection per food identity

Affection	Mean	SD	p50	Min	Max	N
Omnivore	8.308	10.88	9	-25	35	819
Organic omniv.	5.182	12.93	4.5	-18	28	22
Flexitarian	8.924	9.384	10	-13	28	139
Lactopesco	1.484	15.13	1	-25	33	31
Lactoovo	6.826	11.68	9.5	-22	25	46
Vegan	13.64	9.780	17	-5	27	11
Total	8.112	10.99	9	-25	35	1068

Affection or emotional well-being per each food identity. Table provides mean values, standard deviation (SD), median (p50), intervals' minimum and maximum, and count (N).

Figure 16

Subjective vitality per food identity

**Table 2.3**

Descriptive statistics of subjective vitality per food identity

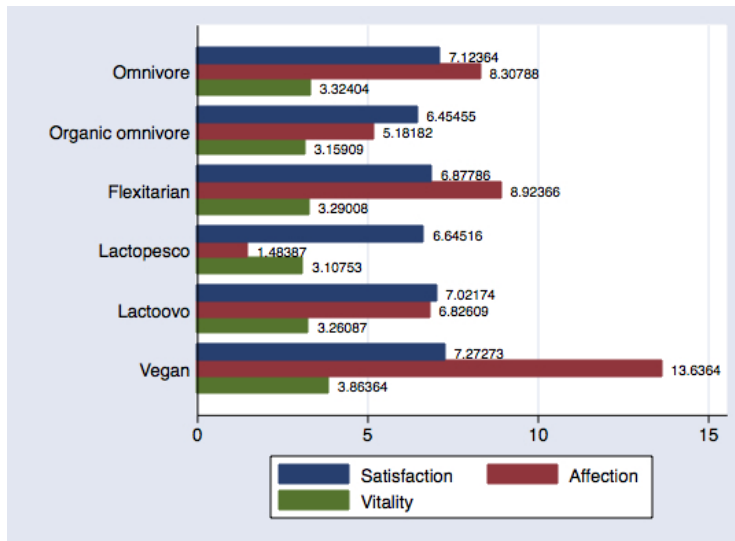
Vitality	Mean	SD	p50	Min	Max	CV	N
Omnivore	3.324	0.737	3.333	1	5	22.17%	819
Organic omniv.	3.159	0.902	3.167	1.667	5	28.55%	22
Flexitarian	3.29	0.647	3.167	1.667	5	19.68%	139
Lactopesco	3.108	0.856	3	1.667	5	27.54%	31
Lactoovo	3.261	0.789	3.167	1.833	5	24.18%	46
Vegan	3.864	0.823	3.833	2.333	5	21.29%	11
Total	3.313	0.739	3.333	1	5	22.30%	1068

Subjective vitality per each food identity. Table provides mean values, standard deviation (SD), median (p50), intervals' minimum and maximum, Pearson coefficient of variation (CV), and count (N).

From a general standpoint, in Figure 17, we show a horizontal bar graph to compare the mean values for three measures of subjective well-being considering food identity categorization. We observe that lacto-pesco vegetarians obtain the lowest means on the scales of affection and vitality in comparison to meat eaters and vegetarians. However, the results show that above all vegans rate higher in means of life satisfaction, affection, or emotional well-being, and perceived vitality than any other food identity, which is in line with previous results on its median values.

Figure 17

Subjective well-being measures per food identity (general overview)



4.1.1.2 Subjective well-being and vegetarian scale

Once having analysed the existing relationship between subjective well-being and food identity, it is also interesting to detail its link with vegetarian scale, so as to examine the self-identified food profiles with their food pattern rated on a scale from 1 (completely omnivorous) to 10 (completely vegan). As expected, the higher the score on vegetarian scale, the higher the vegetarian orientation in food identity (see Table 3 and Figure 18). Also, as for the homogeneity of our data, we observe that vegetarian identities have a considerably higher homogeneity than meat eaters. Despite certain differences between meat avoiders and meat eaters, overall, the homogeneity of the data is good (CV=65%). Consequently, we complement this table with information on the link to subjective well-being in its three measures (see Figure 18).

Table 3

Vegetarian scale per food identity

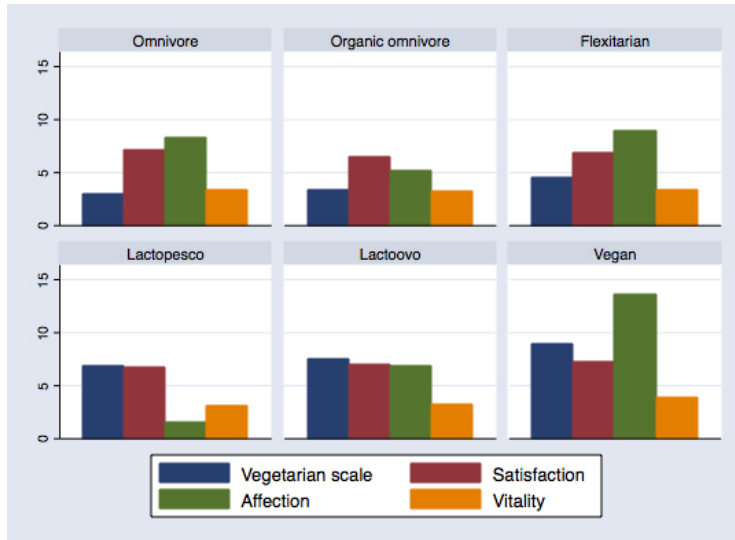
Vegetarian scale	Mean	SD	p50	Min	Max	CV	N
Omnivore	2.947	1.949	3	1	10	66.16%	819
Organic omniv.	3.318	1.836	3	1	7	55.33%	22
Flexitarian	4.443	1.724	5	1	8	38.80%	139
Lactopesco	6.871	1.359	7	4	9	19.79%	31
Lactoovo	7.5	1.378	8	3	9	18.38%	46

Vegan	8.909	2.468	10	2	10	27.70%	11
Total	3.51	2.287	3	1	10	65.15%	1068

Vegetarian scale per each food identity. Table provides mean values, standard deviation (SD), median (p50), intervals' minimum and maximum, Pearson coefficient of variation (CV), and count (N).

Figure 18

Subjective well-being measures per food identity and vegetarian scale



4.1.2 Environmental commitment

In this section we present the descriptive statistics of environmental commitment variables, assessed as connectedness to nature and pro-environmental behaviour. First, we identify the relation between connectedness to nature and food identity (4.1.2.1). Second, we explore the link with subjective well-being (4.1.2.2) that is connected to our hypothesis 2. Third, we show the relation between pro-environmental behaviour and food identity (4.1.2.3), and finally, we hone in on the link of pro-environmental behaviour, food identity, political wing, and vegetarian adherence (4.1.2.4) that will lead us to contrast our hypothesis 3.

4.1.2.1 Connectedness to nature and food identity

In Table 4 we measure nature relatedness on a connectedness-to-nature scale from 1 to 5 per each food identity, from omnivore to vegan. We take into account the general sample (1068 observations). The mean values show that vegans relate stronger to nature (mean=3.9481) than any other food identity, followed by organic omnivores and lacto-ovo vegetarians. Omnivores experience the weakest connectedness to nature (mean=3.2274). Overall, the homogeneity of the data is good, and consequently the obtained means can be considered as representative (CV=19%).

Table 4

Connectedness-to-nature scale per food identity

Connectedness to nature	Mean	SD	p50	Min	Max	CV	N
Omnivore	3.227	0.595	3.214	1.357	5	18.42%	819
Organic omniv.	3.838	0.607	3.75	2.714	5	15.83%	22
Flexitarian	3.489	0.69	3.5	1.357	4.857	19.78%	139
Lactopesco	3.559	0.781	3.571	1.643	4.714	21.95%	31
Lactoovo	3.753	0.597	3.75	2.214	4.929	15.90%	46
Vegan	3.948	0.693	4.071	3	4.857	17.54%	11
Total	3.312	0.637	3.286	1.357	5	19.22%	1068

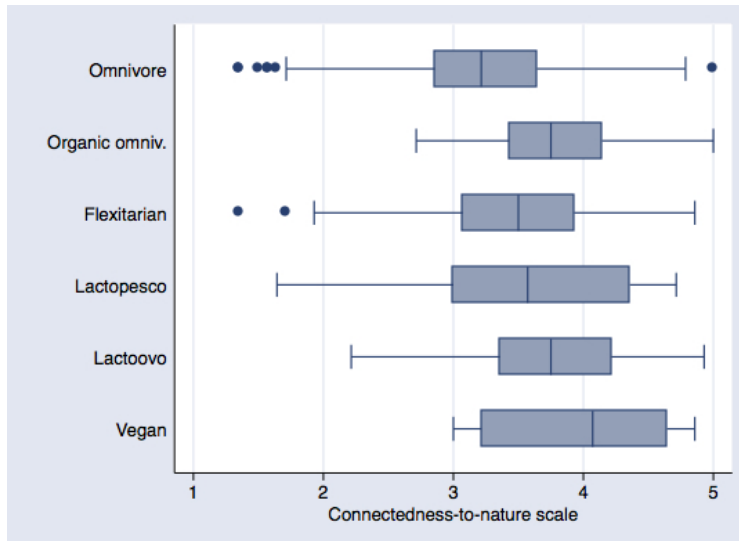
Connectedness-to-nature scale per each food identity. Table provides mean values, standard deviation (SD), median (p50), intervals' minimum and maximum, Pearson coefficient of variation (CV), and count (N).

We complement the previous table with Figure 19, in which we show a horizontal boxplot referring to the median values and data distribution of connectedness-to-nature scale per each food identity group. We observe that median values and interquartile ranges are uneven across existing food identity categories and find that vegans obtain the highest score in the median of nature connectedness than any other food identity while omnivores score the lowest with most of the outliers below the minimum value. Interesting to note is that the category of organic omnivores also rates high on nature

relatedness and has a smaller interquartile range than vegans that means its values are more condensed.

Figure 19

Connectedness-to-nature scale per food identity

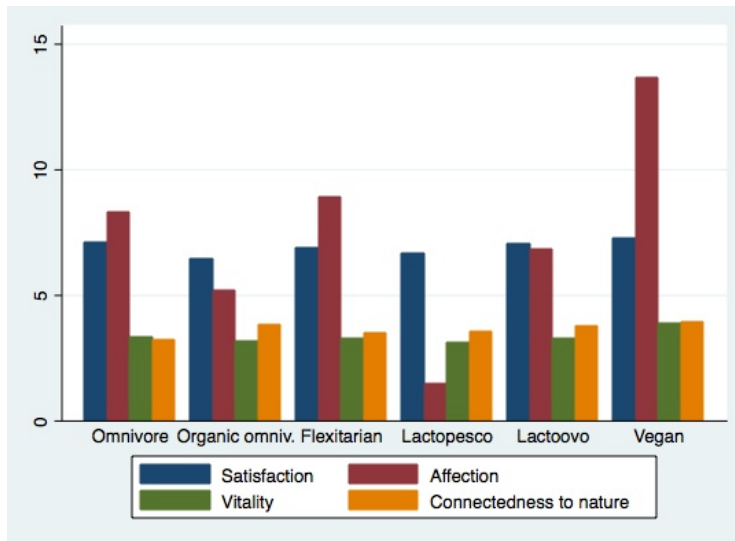


4.1.2.2 Connectedness to nature, food identity, and subjective well-being

In Figure 20 we show a vertical bar graph in order to compare the mean values of subjective well-being measures and connectedness to nature per each food identity. We observe that the mean values of nature relatedness follow a similar tendency than did for medians, rating higher vegans followed by organic omnivores. Vegans have higher means in satisfaction, affection, and vitality. Lacto-pesco vegetarians experience the lowest rates in affection. However, emotional affect, as well as other measures of SWB and connectedness to nature does not seem to follow a trend.

Figure 20

Subjective well-being and connectedness-to-nature scale per food identity



4.1.2.3 Pro-environmental behaviour and food identity

In Table 6 we show the descriptive statistics of pro-environmental behaviour measured on a scale from 1 to 5 per each food identity, considering the larger sample of 1068 observations. The mean values show that vegans engage stronger with pro-environmental behaviour (mean=3.8924) than any other food identity, followed by lacto-ovo vegetarians and organic omnivores. In addition, omnivores have the weakest pro-environmental behaviour (mean=2.7485) similar as with their connectedness to nature, detailed in previous paragraph (Figure 19). Overall, the homogeneity of the data is good, and consequently the means can be considered as representative (CV=22%).

Table 5

Pro-environmental behaviour per food identity

Pro-enviro. behaviour	Mean	SD	p50	Min	Max	CV	N
Omnivore	2.749	0.553	2.733	1	5	20.14%	819
Organic omniv.	3.558	0.604	3.4	2.4	4.8	16.97%	22
Flexitarian	3.278	0.535	3.267	2.133	4.667	16.33%	139

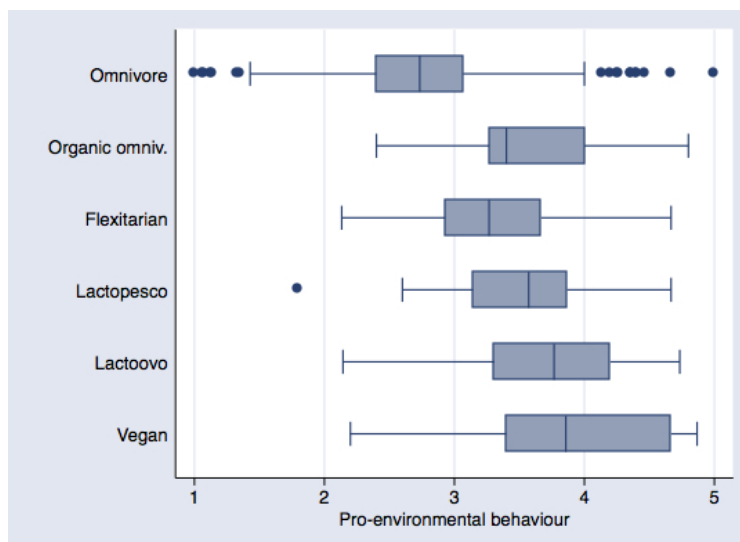
Lactopesco	3.526	0.603	3.571	1.8	4.667	17.11%	31
Lactoovo	3.71	0.634	3.767	2.143	4.733	17.09%	46
Vegan	3.892	0.812	3.857	2.2	4.867	20.87%	11
Total	2.906	0.639	2.867	1	5	21.95%	1068

Pro-environmental behaviour per each food identity. Table provides mean values, standard deviation (SD), median (p50), intervals' minimum and maximum, Pearson coefficient of variation (CV), and count (N).

To complement the aforementioned table, we show in Figure 21 a horizontal boxplot referring to the median values and data distribution of pro-environmental behaviour per each food identity group. We observe that median values and interquartile ranges are uneven across different food categories and find that vegans obtain the highest scores in the median of pro-environmental behaviour and the largest interquartile range than any other food identity, which means their values are more spread out. Interesting to note is the case of omnivores with the lowest median value in pro-environmental behaviour and the existence of outliers below the minimum and above the maximum values. Overall, vegetarians rate with a higher median value in pro-environmental behaviour than meat eaters.

Figure 21

Pro-environmental behaviour per food identity



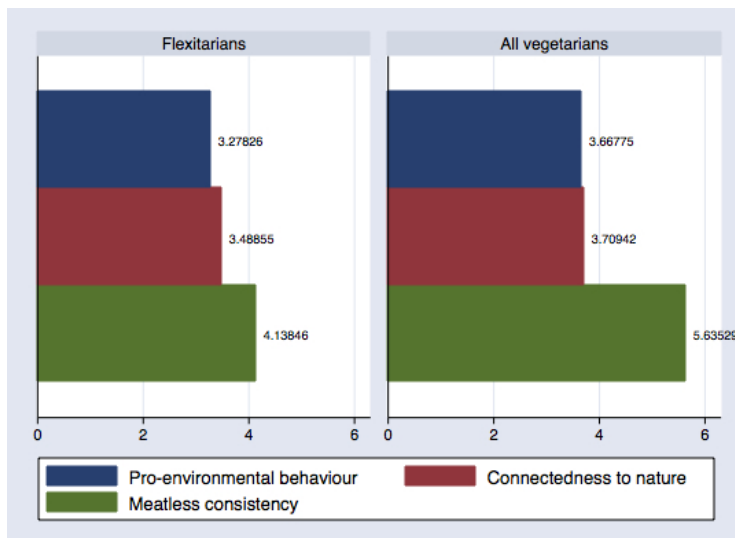
4.1.2.4 Environmental commitment, food identity, political wing, and vegetarian adherence

Vegetarian adherence in its facet of meatless consistency

In Figure 22.1 we present a horizontal graph bar to show the mean values of pro-environmental commitment variables (pro-environmental behaviour and connectedness to nature) and meatless consistency (reversed scale of meat consumption) accounting for flexitarian and vegetarian food identities. We use this time the subset sample of 227 observations. It is clear to observe that the higher the vegetarian food identity the higher the meatless consistency (less meat consumption in the past three days). We also perceive a similar tendency for pro-environmental behaviour and connectedness to nature that is higher for vegetarians than for flexitarians.

Figure 22.1

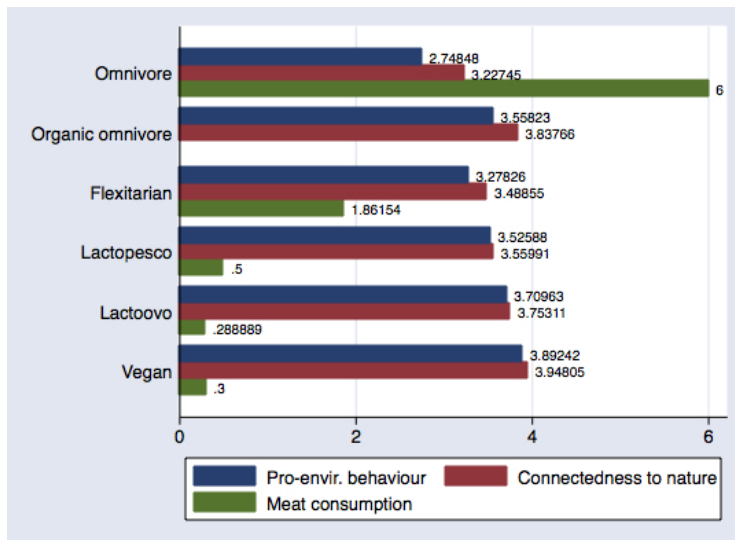
Pro-environmental commitment and meatless consistency per vegetarians and flexitarians



Also, interesting to note is the general overview of pro-environmental commitment variables and meat consumption for all food identity categories (see Figure 22.2). Here, the meat consumption clearly decreases with higher vegetarian food identity, which is analogous to pro-environmental behaviour and connectedness-to-nature tendency.

Figure 22.2

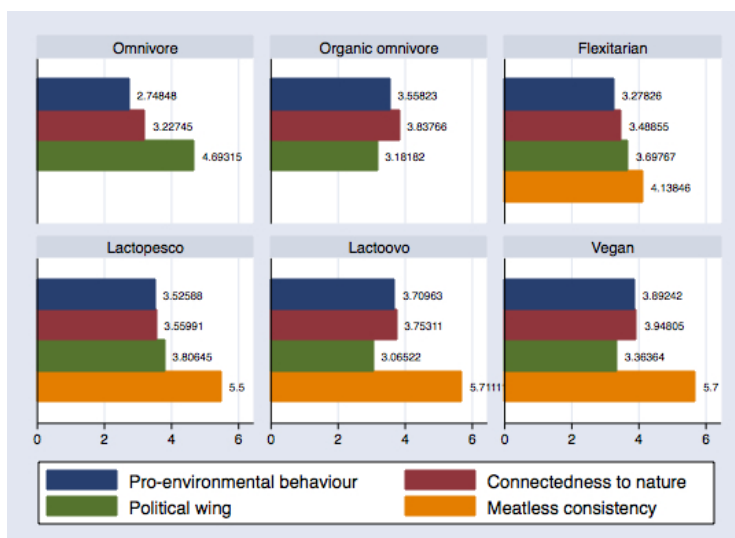
Pro-environmental commitment and meat consumption per all food identities (general overview)



In order to shed light on the aspect of meatless consistency, we also account for political wing, measured on a scale from 1 to 10 (from extremely left to extremely right political orientation) to analyse its tendency per each food identity (see Figure 23). In this horizontal graph bar, the mean values of omnivores rate the highest, translating that meat eaters tend to consider themselves more right-wing than left-wing politically oriented, which is contrary to vegans, organic omnivores, and lacto-ovo vegetarians that are more left-wing politically oriented.

Figure 23

Pro-environmental commitment, political wing, and meatless consistency per food identity (general overview)

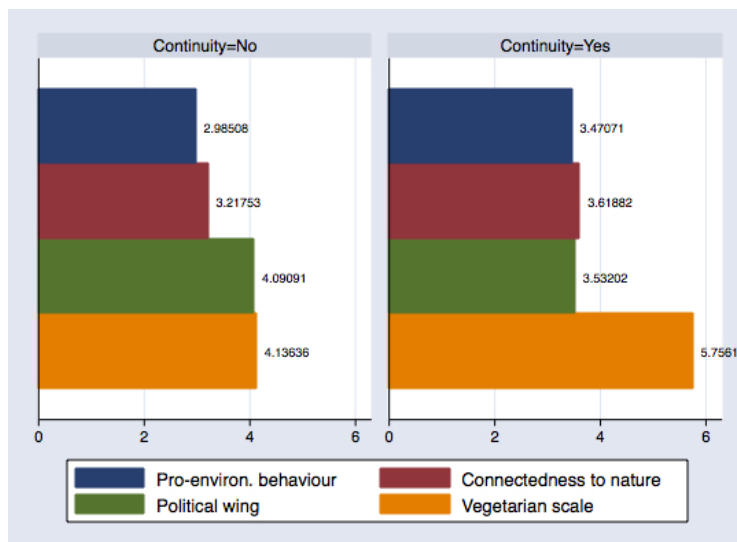


Vegetarian adherence in its facet of intention to continue with a meat-reduced diet

As for intention to continue with meat-reduced diet, we took into consideration pro-environmental commitment variables, political wing, and vegetarian scale of the subset sample of 227 participants. As shown in Table 1, 90% of meat reducers intend to continue with meat-reduced diet. Additionally, in Figure 24 we can observe that rating higher in pro-environmental behaviour engagement, connectedness to nature, and vegetarian scale links positively to intention to continue with meat-reduced diet. However, rating higher on political-wing scale (that is, being more prone to right-wing ideology) associates negatively with intention to continue avoiding meat.

Figure 24

Pro-environmental commitment, political wing, and intention to continue meat-reduced diet per food identity



4.1.3 Political orientation and vegetarian commitment

As for food identity (see Figure 25.1), we compare the median values of political wing, measured on a scale from 1 (extremely left) to 10 (extremely right) per each food identity. We observe that vegans and lacto-ovo vegetarians share similar medians and interquartile ranges, obtaining the lowest rates on the political scale followed by organic omnivores and flexitarians. Yet outliers can be spotted almost in all groups except for omnivore category, which is the most right-wing oriented group. In Figure 25.2 we compare the mean values of vegetarian scale (1-10) and political wing (1-10) and

observe that participants who rate higher on vegetarian scale are more left-wing oriented and vice versa, with certain nuances in regards to amplitude.

Figure 25.1

Political wing per food identity (general overview)

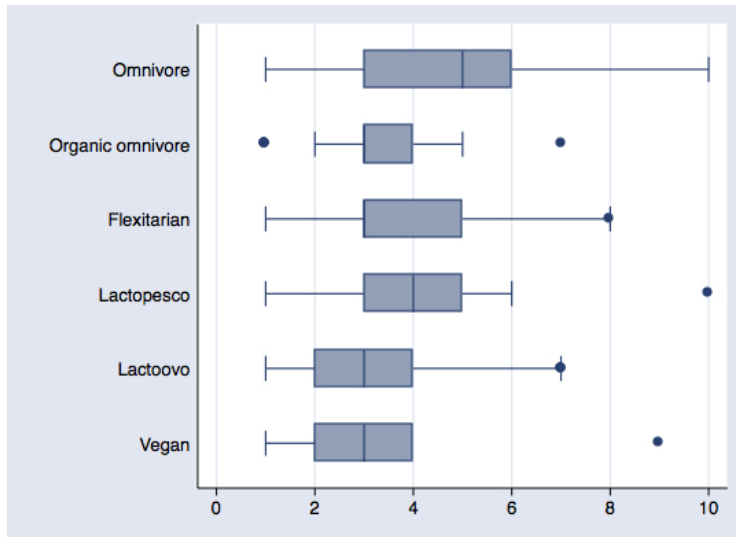
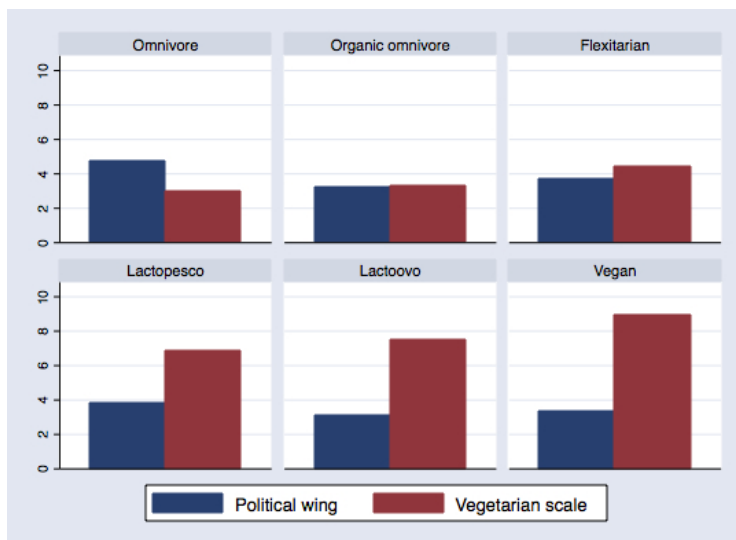


Figure 25.2

Political wing and vegetarian scale per food identity (general overview)

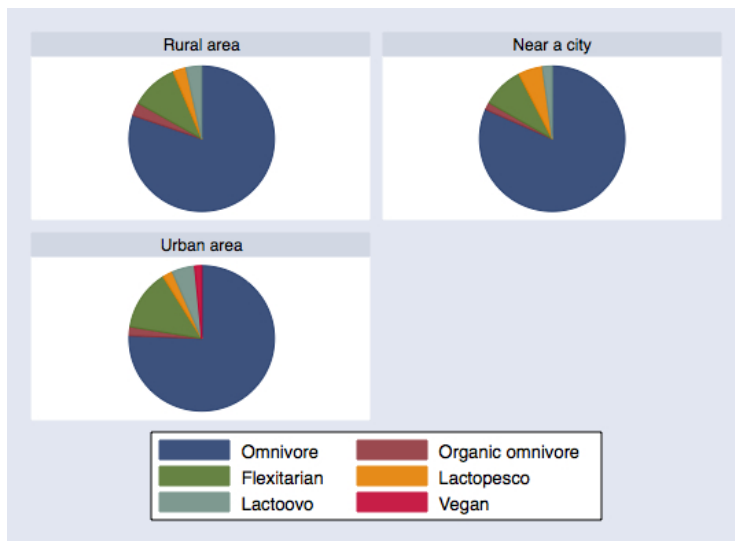


4.1.4 Control variables

In Figure 26 we show, through the means of a pie chart, the representation of different food identities according to their area of residence. Interesting to note is that we find vegan food identity only present in urban area, where 67% of our general sample lives.

Figure 26

Food identities per area of residence



In Figure 27 we use the 227 participants' subsample to present the motivational distribution per each meat-reducer identity, from flexitarian to vegan, accounting for health, social, taste, and animal motivations. We perceive that the highest variety and distribution of motivations belongs to the flexitarian identity, while being vegan refers to identifying mostly with animal causes. It is worth to highlight that in the case of lacto-ovo vegetarians, despite their majority distribution linked to animal motivations; they still identify themselves with all varieties of motivations.

Figure 27

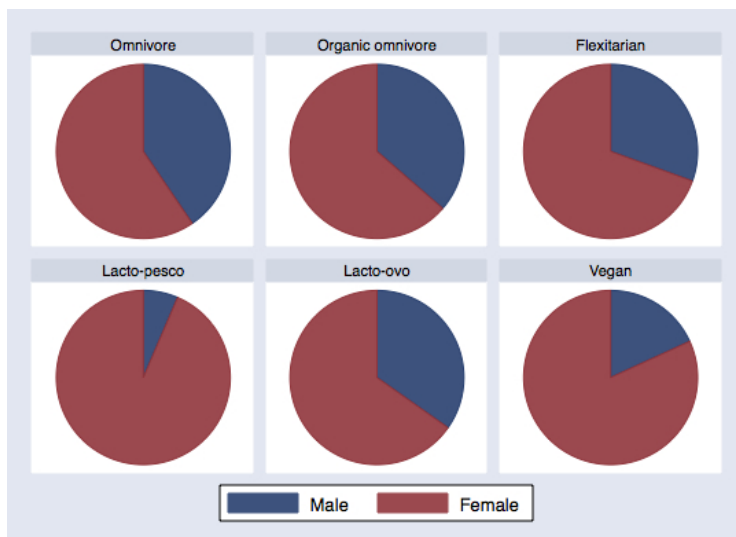
Motivations per food identity



In Figure 28 we show the gender representation of all food identities. We can perceive female majority in all categories but with strong nuances in regards to amplitude. Women represent 62% of the general sample, and those that are above this percentage belong to meat-reducers profiles with particularly predominant female representation in the case of vegans and lacto-pesco vegetarians.

Figure 28

Gender distribution per food identity

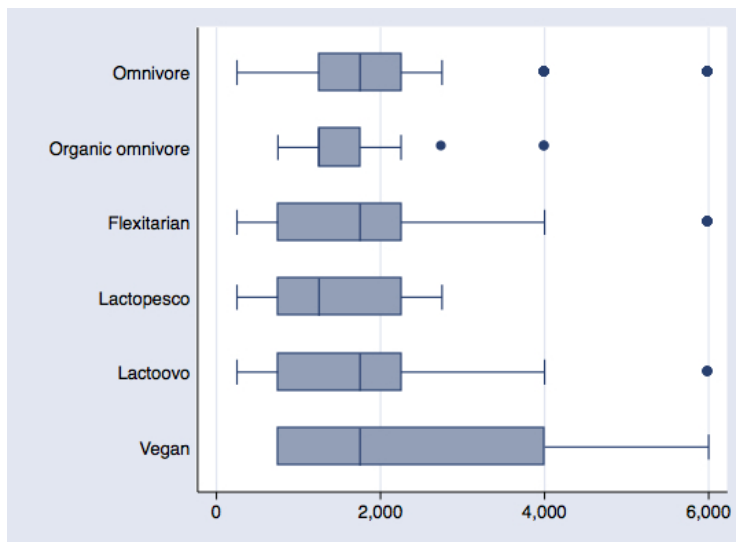


In Figure 29 we compare the median values of income per each food identity. We identify uneven interquartile ranges across different food identities with the highest one for vegans, in which parents' income spreads out to 4000€ per month. The medians are

similar for omnivores, flexitarians, lacto-ovo vegetarians, and vegans with the lowest values for lacto-pesco vegetarians and organic omnivores. However, there are outliers above the maximum value for most of food identities expect for vegans and lacto-pesco vegetarians.

Figure 29

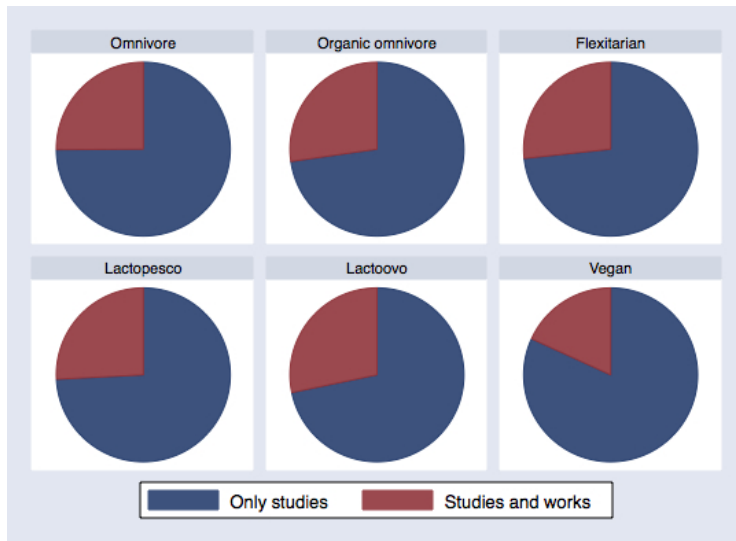
Parents' income per food identity



In Figure 30 we refer to participant's work status ('only studies' versus 'studies and works') considering each food identity. Participants who work while studying represent 26% of the general sample. We observe that the distribution is similar for all food identities except for the vegan category that is below the average and lacto-ovo vegetarians that are above the average.

Figure 30

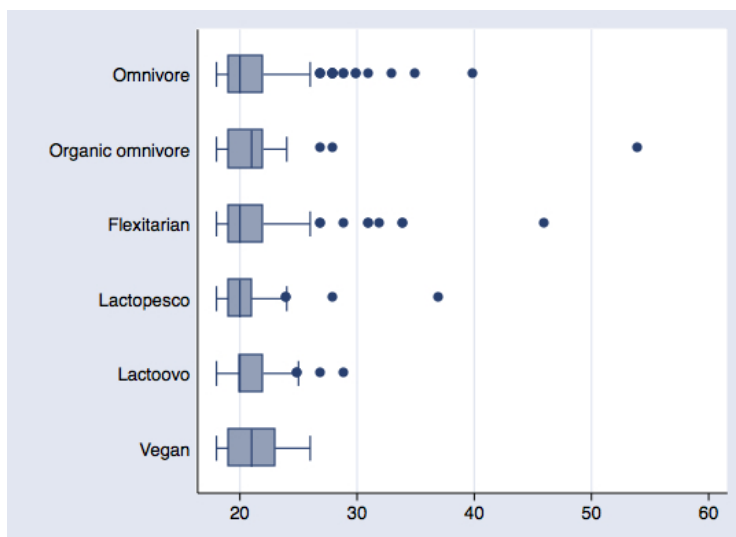
Work status per food identity



In Figure 31 we compare the median values of age per each food identity. We observe uneven interquartile ranges and median values across different food identities. Notable to highlight is the existence of numerous outliers that occupy the region above the maximum value for all food identities except for vegans and with the strongest presence of outliers in the case of omnivores and flexitarians.

Figure 31

Age per food identity

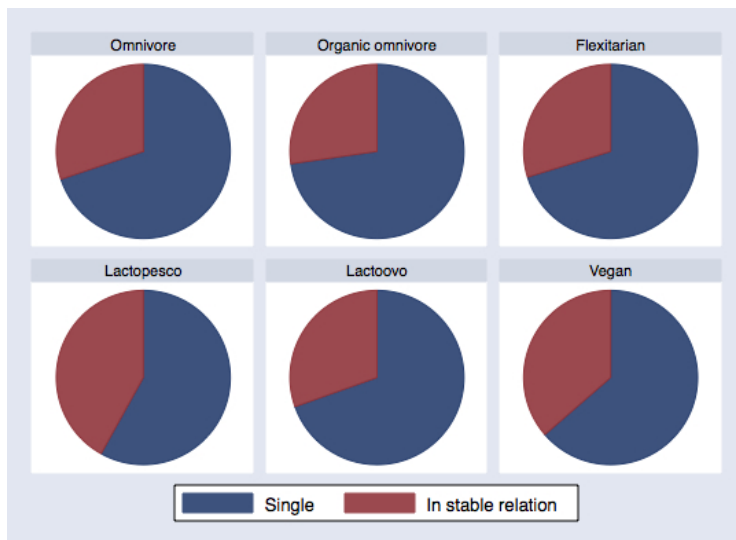


In Figure 32 we refer to the distribution of civil status comparing participants who are single versus those who are in a stable relationship per each food identity. Participants who are single represent 64% of the general sample. We observe that lacto-pesco

vegetarians and vegans are below this average, which translates into that they are more in a stable relationship than other food identities.

Figure 32

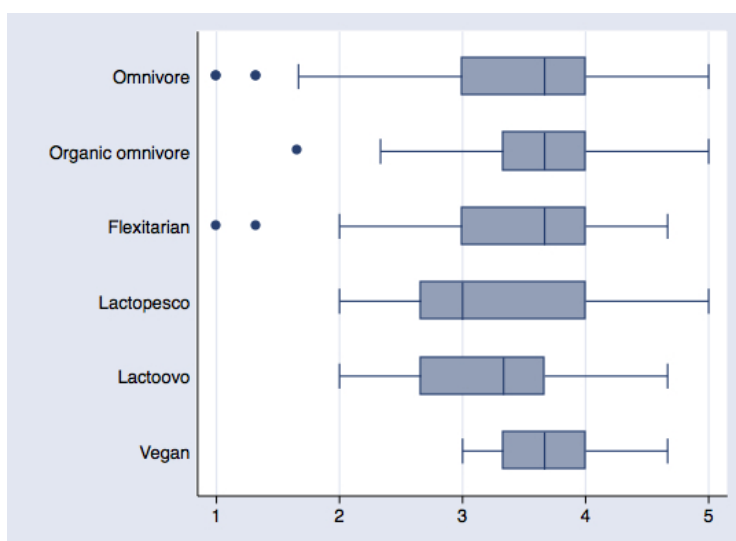
Civil status per food identity



In Figure 33 we compare the median values of relations with others (on a scale from 1 to 5) accounting for each food identity. We observe uneven interquartile ranges across different food identities. The median values are similar except for lacto-pesco and lacto-ovo vegetarians who rate the lowest on the scale of relations, respectively. As for outliers, those occupy the region below the minimum value for all meat eaters (omnivores, organic omnivores, and flexitarians).

Figure 33

Relations per food identity



4.2 Results from estimations

This section is divided in two main parts: *vegetarianism, subjective well-being, and connectedness to nature* (4.2.1) linking to hypotheses 1 and 2 (objective 1 and 2), and *vegetarian adherence, environmental commitment, and political wing* (4.2.2) relating to hypothesis 3 (objective 3).

In section 4.2.1, we first take into account multicollinearity issues by presenting the matrix of correlation of key variables and analysing the variance inflation factor (4.2.1.1) in our models, and second, we study the results to contrast the hypotheses 1 and 2 (4.2.1.2). And we follow the same structure for section 4.2.2 in order to contrast the hypothesis 3.

4.2.1 Vegetarianism, subjective well-being, and connectedness to nature (objectives 1 and 2)

In this section, we proceed to contrast hypotheses 1 and 2, previously detailed in methodology (3.3), in order to answer objectives 1 and 2 of our work, respectively.

4.2.1.1 Matrix of correlations

Before implementing the regression analyses, first, we proceed to study the correlational nature of our variables under consideration for our hypotheses 1 and 2 and present the matrix of correlations. To do so, we recall to our hypothesis 1, in which we expect a negative relationship between vegetarian commitment, assessed as vegetarian food identity and vegetarian scale, and subjective well-being. As for hypothesis 2, we recall to our theory that connection to nature would moderate the relationship between vegetarianism and subjective well-being. Therefore, first, we present the correlational matrix for hypotheses 1 and 2 (see Table 6).

In table 6 we show the correlation between the variables of subjective well-being, vegetarian commitment, and connectedness to nature. All three subjective well-being variables are positively correlated, but the correlation is not perfect, suggesting that they are related but not the same. Food identity is not correlated with any subjective well-being variable. As regards vegetarian scale, it is negatively correlated with life

satisfaction, positively correlated with food identity but no correlation has been found with the rest of the subjective well-being variables. As we add connectedness to nature into the matrix, we observe that it is positively related to all subjective well-being variables, vegetarian scale, and food identity. Additionally, for the interaction variable of connected vegetarian, there is a positive link with food identity, vegetarian scale, and connectedness to nature due to its interconnection.

Table 6

Correlational matrix of variables related to hypotheses 1 and 2

	Satisfaction	Affection	Vitality	Food identity	Veget. scale	Connectedness to nature	Connect. veget.
Satisfaction	1						
Affection	0.5544***	1					
Vitality	0.5080***	0.6217***	1				
Food identity	-0.0461	-0.0291	-0.0084	1			
Veget. scale	-0.0651*	-0.0258	-0.0093	0.5515***	1		
Connectedness to nature	0.0974**	0.1484***	0.2015***	0.2466***	0.2456***	1	
Connect. veget.	-0.0239	0.0202	0.0545	0.5836***	0.9521***	0.4774***	1

Second, in order to reach a higher consistency of our results, we run the variance inflation factor analysis (see Annex 2) to allocate possible issues of multicollinearity. As shown in Annex 2, we did not identify a significant concern of partial-multicollinearity existence, as all values fell far below 10 except for age squared and created interactions between input variables that commonly lead to certain levels of collinearity. Having considered that, we adopted a gradual approach in our model design and studied the influence of each variable on another in consecutive stages. In the following section, we proceed to introduce the results of our estimations.

4.2.1.2 Results of our estimations

Below, we present three tables (Tables 7, 8, and 9) enclosing results of our analyses per each measure of subjective well-being in relation to vegetarian commitment and connectedness to nature in order to contrast hypotheses 1 and 2, respectively, considering the sample of 1068 participants. For the purpose of avoidance of imperfect multicollinearity and with the aim to estimate the partial regression coefficients more precisely, we designed eight models with several interactions, useful for the contrasting of our hypotheses, considering the outcome variable subjective well-being, assessed as life satisfaction (see Table 7), affection or emotional well-being (see Table 8), and subjective vitality (see Table 9). Overall, all models are globally significant, and adjusted R-squared ranges from 6% to 17%, with the lowest values for the life satisfaction estimations and the highest ones for the vitality models.

As for the control variables that fully constitute model 1 of the three tables and complement models 2-8, we observe that parents' income and having relations with others associate positively with all subjective well-being variables. On the other hand, being single relates negatively to life satisfaction and emotional well-being, however, produces no influence on vitality. We also find that females experience lower emotional well-being and subjective vitality, but the influence on life satisfaction is not statistically different from males. In addition, political orientation has a non-significant influence, as well as area of living and work status, in all models. As for age and age squared, we detect a significant correlation but only with subjective vitality (higher the age higher the vitality). Furthermore, we observe some differences in regards with areas

of study, however, those do not show a clear pattern, except for medicine students who seem to have a greater life satisfaction than students of other disciplines (Table 8, model 3-8).

Results on hypothesis 1

According to hypothesis 1, we expect a negative relationship between vegetarian commitment and subjective well-being. More specifically, the greater the vegetarian commitment in terms of vegetarian scale and identity, the lower the subjective well-being (H1.1). Also, the relationship between being vegetarian and subjective well-being will differ relying on the happiness indicator under consideration (H1.2). Models 2 and 3 in tables 7, 8, and 9 indicate that H1.1 can be partly accepted. The vegetarian scale, that is defined as the degree to which persons consider themselves as vegetarians according to their food pattern, is negatively related to life satisfaction, but not related to emotional affection and subjective vitality. This is in line with our previous results on matrix of correlations where the link was detected for life satisfaction only.

However, all three measures of subjective well-being are negatively correlated with the vegetarian scale when introducing connectedness to nature in models 5, in tables 7, 8, and 9. This evidence suggests that connectedness to nature has a role to play in the relationship (H2). As for food identity, here the pattern is not clear (models 3 and 7), since lower life satisfaction is associated with flexitarian identity (-0.226*), lower emotional well-being links with lacto-pesco vegetarians (-5.398**), but higher vitality relates to vegans (0.505**). In sum, a more vegetarian oriented lifestyle associates negatively or insignificantly to subjective well-being, except for its strictest form of dieting, in which vegans gain in higher vitality, and connectedness to nature mediates the relation of vitality and the vegetarian scale. This means that we cannot completely accept H1.1, but these findings can support our H1.2.

Results on hypothesis 2

For hypothesis 2, we theorized that connectedness to nature moderates the relationship between vegetarianism and subjective well-being. In this line, our results show in models 4 in tables 7, 8, and 9 that there exists a positive link between subjective well-being in all its measures and connectedness to nature. However, we observe certain

nuances in the relationship between subjective well-being and vegetarianism. In consequence, the food identity of organic omnivore that was non-significant a priori now becomes negatively linked to life satisfaction and emotional well-being as a result of introducing the independent variable connectedness to nature (models 7). As mentioned above for hypothesis H1.1, the vegetarian scale goes from non-significant to negative association with all three measures of subjective well-being (models 5).

In order to further contrast our hypothesis 2, we include interactions that combine nature connectedness with vegetarian commitment, assessed as vegetarian scale (models 6) and food identities (models 8). By having conducted these interactions, we discover the importance of considering the role of connectedness to nature on the relationship between subjective well-being and vegetarian commitment. Introducing vegetarian scale with life satisfaction in model 6 of the table 7 makes the negative coefficient multiply by more than 3 in comparison to model 5, while connectedness to nature and its interaction variable *connected vegetarian* become non-significant. When introducing the vegetarian scale with emotional well-being variable (model 6 in table 9), here the partial coefficient becomes non-significant again, and connectedness to nature reduces its coefficient by about 1/5 and goes from significant at 1% to significant at 10%, while the interaction variable *connected vegetarian* is non-significant.

On the other hand, the role of nature connectedness on the link between subjective well-being and vegetarian scale becomes clear when we analyse the outcome variable vitality (Table 9). In model 6 we identify connectedness to nature, vegetarian scale, and the interaction variable *connected vegetarian* as significant. Therefore, the marginal relationship of subjective vitality and vegetarian scale depends now on the value on the scale of connectedness to nature (1-5). In fact, the relation can be quantified as $-0.116 + 0.0282 * \text{connectnature}$. Equalling zero means that when connectedness to nature is higher than 4.11 ($0.116/0.0282$), the vegetarian scale has a positive influence on subjective well-being in its aspect of vitality, and not negative. Given that the maximum value of the scale of connectedness to nature is 5, it means that in order to reverse the negative relation of vitality-vegetarian scale, a high connectedness to nature is required.

Furthermore, the role of nature connectedness on the link between the subjective well-being and food identity experiences several changes in models 8: vegan identity significantly interacts with connectedness to nature in the life satisfaction models (Table

7). Again, the marginal relationship of life satisfaction and food identity depends on the value on the scale of connectedness to nature (1-5). Therefore, if connectedness to nature is higher than 3.94 ($8.974/2.28$), then the vegan identity enjoys greater life satisfaction and the negative link is compensated by the influence of strong connectedness to nature. As for emotional well-being, the interaction variable of vegan identity and connectedness to nature (connected vegan) is positively related to emotional well-being (Table 8), while connectedness to nature is significant but being vegan is not. In this way, we could reason that the link of connectedness to nature with affection is greater if being vegan. In addition, lacto-pesco vegetarians can also be related to greater emotional well-being if their connectedness to nature is very high (4.94, that is, $20.930/4.236$).

Regarding the aspect of subjective vitality, we find in Table 9 that if vegans are strongly connected to nature, they enjoy higher levels of vitality. Here, the marginal relationship of vitality and food identity also depends on the value on the scale of connectedness to nature (1-5). Therefore, in order to gain greater vitality than the other food identity groups, vegans should rate on the scale of connectedness to nature at least 3.24 ($2.009/0.620$) or higher in order to compensate the negative link with vegan vitality. In sum, hypothesis 2 cannot be fully accepted, since the mediating role of connectedness to nature seems to positively influence, on some occasions, vegetarian-related variables with gains in subjective well-being, particularly in the case of vegan and lacto-pesco vegetarian food identities.

Table 7

Relationship of vegetarianism and connectedness to nature with life satisfaction

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Variables	Satisfaction	Satisfaction	Satisfaction	Satisfaction	Satisfaction	Satisfaction	Satisfaction	Satisfaction
Parents' income	7.88e-05**	7.66e-05**	7.49e-05*	8.17e-05**	7.97e-05**	7.65e-05**	7.89e-05**	7.93e-05**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Age	-0.001	0.013	-0.014	-0.004	0.012	0.003	-0.018	0.010
	(0.066)	(0.065)	(0.068)	(0.065)	(0.064)	(0.064)	(0.068)	(0.065)
Age ²	0.000	0.000	0.001	0.000	0.000	0.000	0.001	0.000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Females	-0.035	0.009	-0.008	-0.068	-0.024	-0.018	-0.042	-0.052
	(0.109)	(0.108)	(0.110)	(0.110)	(0.109)	(0.109)	(0.110)	(0.110)
Single	-0.438***	-0.448***	-0.444***	-0.437***	-0.449***	-0.445***	-0.445***	-0.453***
	(0.102)	(0.102)	(0.102)	(0.102)	(0.101)	(0.101)	(0.102)	(0.102)
Relations	0.394***	0.403***	0.387***	0.373***	0.380***	0.382***	0.359***	0.355***
	(0.070)	(0.070)	(0.071)	(0.070)	(0.070)	(0.070)	(0.072)	(0.072)
Work status	-0.060	-0.061	-0.064	-0.084	-0.091	-0.084	-0.095	-0.100
	(0.124)	(0.123)	(0.124)	(0.124)	(0.123)	(0.123)	(0.123)	(0.124)
Near a city	-0.014	0.007	-0.011	0.000	0.028	0.029	0.006	-0.007
	(0.174)	(0.174)	(0.174)	(0.174)	(0.173)	(0.173)	(0.173)	(0.172)
Urban area	-0.020	0.006	-0.017	-0.033	-0.005	0.002	-0.027	-0.028
	(0.143)	(0.143)	(0.143)	(0.143)	(0.142)	(0.142)	(0.143)	(0.142)
Political wing	0.094	0.094	0.150	0.117	0.123	0.126	0.198	0.192
	(0.289)	(0.293)	(0.289)	(0.284)	(0.287)	(0.287)	(0.284)	(0.286)
Economics	-0.034	-0.042	-0.022	0.008	0.010	0.004	0.036	0.012
	(0.246)	(0.251)	(0.248)	(0.241)	(0.246)	(0.247)	(0.243)	(0.247)
Pedagogy	0.292	0.290	0.283	0.314	0.316	0.311	0.311	0.273
	(0.259)	(0.264)	(0.262)	(0.255)	(0.259)	(0.260)	(0.256)	(0.260)
Environment	0.026	0.190	0.080	-0.050	0.130	0.064	0.046	-0.039
	(0.491)	(0.482)	(0.466)	(0.481)	(0.467)	(0.460)	(0.452)	(0.416)
Sociology	-0.201	-0.158	-0.154	-0.201	-0.149	-0.161	-0.127	-0.196
	(0.290)	(0.295)	(0.296)	(0.285)	(0.290)	(0.290)	(0.290)	(0.293)
Engineering	0.183	0.158	0.200	0.198	0.172	0.165	0.227	0.222
	(0.350)	(0.353)	(0.349)	(0.346)	(0.350)	(0.351)	(0.345)	(0.348)
Medicine	0.503	0.497	0.520*	0.522*	0.520*	0.504*	0.550*	0.514*
	(0.306)	(0.312)	(0.309)	(0.298)	(0.304)	(0.305)	(0.301)	(0.307)
Social work	0.100	0.124	0.111	0.086	0.111	0.096	0.109	0.090
	(0.284)	(0.288)	(0.289)	(0.279)	(0.283)	(0.283)	(0.284)	(0.287)

Information technology	0.127 (0.414)	0.097 (0.419)	0.144 (0.420)	0.212 (0.418)	0.195 (0.426)	0.165 (0.421)	0.252 (0.426)	0.159 (0.421)
Connectedness to nature				0.208** (0.085)	0.257*** (0.088)	0.072 (0.156)	0.258*** (0.091)	0.136 (0.107)
Vegetarian scale		-0.0611*** (0.022)			-0.0741*** (0.023)	-0.250** (0.119)		
Connect. veget.						0.051 (0.034)		
Organic omnivore			-0.675 (0.482)				-0.823* (0.475)	-7.582*** (2.477)
Flexitarian			-0.226* (0.135)				-0.284** (0.136)	-0.908 (0.767)
Lactopesco			-0.400 (0.361)				-0.477 (0.357)	-2.503* (1.438)
Lactoovo			-0.033 (0.211)				-0.155 (0.215)	-0.768 (1.067)
Vegan			0.057 (0.627)				-0.083 (0.598)	-8.974*** (3.451)
Connect. organic omniv.								1.789*** (0.594)
Connect. flexitarian								0.190 (0.217)
Connect. lactopesco								0.584 (0.394)
Connect. lactoovo								0.182 (0.280)
Connect. vegan								2.280*** (0.792)
Constant	5.728*** (1.074)	5.670*** (1.071)	5.886*** (1.094)	5.192*** (1.058)	4.994*** (1.050)	5.725*** (1.181)	5.226*** (1.071)	5.378*** (1.079)

F	4.100	4.410	3.390	4.350	4.800	4.710	3.760	4.640
R-squared	0.063	0.070	0.069	0.069	0.078	0.080	0.078	0.095

OLS regression models predicting levels of life satisfaction employing control variables (parents' income, age, female gender, single status, relations, work status, area of residence, political wing, and discipline of study), connectedness to nature, vegetarian scale, vegetarian identity in its gradual phases, and the interaction variable of connected vegetarians. All models are globally significant at 1%, according to the F test. N=1068, significant predictors are displayed in bold font. Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

Table 8

Relationship of vegetarianism and connectedness to nature with emotional well-being

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Variables	Affection	Affection	Affection	Affection	Affection	Affection	Affection	Affection
Parents' income	0.000694***	0.000687***	0.000644**	0.000724***	0.000716***	0.000705***	0.000683***	0.000681***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Age	-0.116	-0.071	-0.232	-0.145	-0.076	-0.104	-0.272	-0.029
	(0.454)	(0.457)	(0.470)	(0.449)	(0.451)	(0.449)	(0.465)	(0.460)
Age ²	0.006	0.006	0.009	0.006	0.005	0.005	0.009	0.003
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Females	-2.151***	-2.007***	-1.967***	-2.512***	-2.315***	-2.297***	-2.301***	-2.383***
	(0.718)	(0.716)	(0.726)	(0.713)	(0.711)	(0.710)	(0.718)	(0.717)
Single	-1.375**	-1.409**	-1.419**	-1.360**	-1.414**	-1.402**	-1.435**	-1.506**
	(0.684)	(0.685)	(0.683)	(0.678)	(0.678)	(0.677)	(0.675)	(0.674)
Relations	3.289***	3.320***	3.194***	3.070***	3.098***	3.106***	2.915***	2.914***
	(0.450)	(0.450)	(0.450)	(0.446)	(0.445)	(0.445)	(0.447)	(0.452)
Work status	0.307	0.304	0.335	0.047	0.016	0.040	0.028	-0.053
	(0.833)	(0.833)	(0.829)	(0.831)	(0.829)	(0.830)	(0.825)	(0.830)
Near a city	0.203	0.270	0.284	0.355	0.478	0.480	0.452	0.380
	(1.193)	(1.190)	(1.193)	(1.188)	(1.182)	(1.182)	(1.186)	(1.168)
Urban area	0.645	0.730	0.523	0.507	0.630	0.652	0.419	0.412
	(0.900)	(0.903)	(0.907)	(0.892)	(0.893)	(0.895)	(0.898)	(0.883)
Political wing	1.281	1.281	1.347	1.527	1.553	1.565	1.820	1.802
	(1.636)	(1.648)	(1.631)	(1.615)	(1.630)	(1.627)	(1.616)	(1.623)
Economics	-0.092	-0.116	-0.079	0.367	0.374	0.354	0.491	0.337
	(1.346)	(1.354)	(1.342)	(1.328)	(1.335)	(1.335)	(1.327)	(1.347)
Pedagogy	2.178	2.170	2.038	2.413	2.422	2.405	2.313	2.059

	(1.485)	(1.492)	(1.483)	(1.472)	(1.479)	(1.479)	(1.473)	(1.489)
Environment	3.164	3.708*	2.738	2.339	3.136	2.923	2.403	1.856
	(2.157)	(2.173)	(2.211)	(2.084)	(2.083)	(2.085)	(2.113)	(2.139)
Sociology	-0.505	-0.362	-0.423	-0.510	-0.278	-0.319	-0.156	-0.544
	(1.692)	(1.710)	(1.693)	(1.659)	(1.684)	(1.686)	(1.667)	(1.657)
Engineering	-1.258	-1.340	-1.287	-1.089	-1.205	-1.229	-1.022	-1.012
	(1.812)	(1.812)	(1.824)	(1.791)	(1.784)	(1.788)	(1.800)	(1.829)
Medicine	0.524	0.507	0.580	0.733	0.725	0.672	0.881	0.775
	(1.957)	(1.970)	(1.960)	(1.876)	(1.887)	(1.882)	(1.881)	(1.896)
Social work	-0.408	-0.330	-0.511	-0.565	-0.453	-0.503	-0.531	-0.717
	(1.628)	(1.627)	(1.642)	(1.604)	(1.602)	(1.595)	(1.621)	(1.637)
Information technology	-4.532	-4.634*	-4.500	-3.616	-3.690	-3.789	-3.440	-3.986
	(2.761)	(2.754)	(2.786)	(2.827)	(2.821)	(2.798)	(2.871)	(2.842)
Connectedness to nature				2.241***	2.462***	1.860*	2.546***	1.892***
				(0.564)	(0.567)	(0.989)	(0.584)	(0.686)
Vegetarian scale		-0.203			-0.328**	-0.900		
		(0.146)			(0.145)	(0.759)		
Connect. veget.						0.167		
						(0.215)		
Organic omnivore			-3.224				-4.680*	-54.87***
			(2.747)				(2.572)	(11.050)
Flexitarian			0.394				-0.174	-3.597
			(0.887)				(0.885)	(5.095)
Lactopesco			-5.398**				-6.158**	-20.93**
			(2.499)				(2.434)	(9.529)
Lactoovo			-1.125				-2.324	-1.267
			(1.631)				(1.650)	(10.050)
Vegan			4.178				2.792	-21.700
			(2.675)				(2.403)	(15.120)
Connect. organic omniv.								13.24***
								(2.829)
Connect. flexitarian								1.046
								(1.423)

Connect. lactopesco								4.236*
								(2.595)
Connect. lactoovo								-0.177
								(2.709)
Connect. vegan								6.361*
								(3.466)
Constant	-3.645	-3.836	-1.712	-9.433	-10.310	-7.938	-8.222	-8.460
	(6.943)	(6.948)	(7.093)	(6.943)	(6.929)	(7.530)	(7.088)	(7.121)
F	5.970	5.740	4.970	6.750	6.680	6.470	5.850	7.390
R-squared	0.086	0.088	0.096	0.101	0.105	0.106	0.115	0.128

OLS regression models predicting levels of emotional well-being employing control variables (parents' income, age, female gender, single status, relations, work status, area of residence, political wing, and discipline of study), connectedness to nature, vegetarian scale, vegetarian identity in its gradual phases, and the interaction variable of connected vegetarians. All models are globally significant at 1%, according to the F test. N=1068, significant predictors are displayed in bold font. Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

Table 9

Relationship of vegetarianism and connectedness to nature with subjective vitality

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Variables	Vitality	Vitality	Vitality	Vitality	Vitality	Vitality	Vitality	Vitality
Parents' income	3.58e-05**	3.55e-05**	3.24e-05**	3.85e-05**	3.80e-05**	3.62e-05**	3.57e-05**	3.51e-05**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Age	0.0611**	0.0630**	0.0556*	0.0584*	0.0625**	0.0577*	0.052	0.0675**
	(0.031)	(0.031)	(0.032)	(0.030)	(0.030)	(0.030)	(0.032)	(0.029)
Age²	0.000858*	0.000882*	-0.001	0.000906*	0.000965*	0.000888*	-0.001	0.00110**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)
Females	-0.0879*	-0.0819*	-0.0882*	-0.120**	-0.109**	-0.106**	-0.116**	-0.121**
	(0.048)	(0.048)	(0.048)	(0.047)	(0.047)	(0.047)	(0.048)	(0.047)
Single	-0.027	-0.028	-0.027	-0.026	-0.029	-0.027	-0.028	-0.033
	(0.044)	(0.044)	(0.044)	(0.043)	(0.043)	(0.043)	(0.043)	(0.043)

Relations	0.307***	0.308***	0.305***	0.287***	0.289***	0.290***	0.282***	0.281***
	(0.031)	(0.031)	(0.031)	(0.030)	(0.030)	(0.030)	(0.031)	(0.031)
Work status	0.031	0.031	0.032	0.007	0.006	0.010	0.007	0.005
	(0.051)	(0.051)	(0.051)	(0.050)	(0.050)	(0.050)	(0.050)	(0.050)
Near a city	-0.070	-0.067	-0.070	-0.056	-0.049	-0.049	-0.056	-0.060
	(0.076)	(0.076)	(0.076)	(0.075)	(0.075)	(0.075)	(0.074)	(0.073)
Urban area	-0.016	-0.013	-0.025	-0.029	-0.021	-0.018	-0.034	-0.034
	(0.062)	(0.062)	(0.062)	(0.061)	(0.061)	(0.061)	(0.061)	(0.059)
Political wing	-0.010	-0.010	-0.001	0.012	0.014	0.016	0.038	0.040
	(0.113)	(0.113)	(0.114)	(0.109)	(0.110)	(0.110)	(0.111)	(0.110)
Economics	-0.059	-0.060	-0.056	-0.018	-0.018	-0.021	-0.009	-0.024
	(0.095)	(0.096)	(0.096)	(0.091)	(0.092)	(0.092)	(0.092)	(0.093)
Pedagogy	0.070	0.070	0.068	0.092	0.092	0.089	0.091	0.073
	(0.105)	(0.105)	(0.105)	(0.102)	(0.102)	(0.102)	(0.102)	(0.103)
Environment	0.072	0.095	-0.008	-0.002	0.045	0.009	-0.036	-0.070
	(0.176)	(0.177)	(0.181)	(0.160)	(0.161)	(0.155)	(0.167)	(0.162)
Sociology	-0.176	-0.170	-0.185	-0.176	-0.163	-0.170	-0.162	-0.184*
	(0.117)	(0.118)	(0.118)	(0.111)	(0.112)	(0.112)	(0.112)	(0.111)
Engineering	-0.003	-0.006	0.002	0.012	0.006	0.001	0.024	0.023
	(0.128)	(0.129)	(0.129)	(0.125)	(0.125)	(0.125)	(0.126)	(0.127)
Medicine	0.118	0.118	0.117	0.137	0.137	0.128	0.143	0.130
	(0.125)	(0.125)	(0.125)	(0.119)	(0.120)	(0.119)	(0.120)	(0.120)
Social work	-0.043	-0.040	-0.053	-0.057	-0.051	-0.059	-0.054	-0.071
	(0.114)	(0.114)	(0.115)	(0.109)	(0.109)	(0.108)	(0.110)	(0.110)
Information technology	-0.117	-0.121	-0.107	-0.035	-0.039	-0.056	-0.018	-0.062
	(0.179)	(0.178)	(0.180)	(0.181)	(0.181)	(0.178)	(0.183)	(0.181)
Connectedness to nature				0.202***	0.215***	0.112*	0.213***	0.158***
				(0.037)	(0.038)	(0.067)	(0.039)	(0.045)
Vegetarian scale		-0.008			-0.0194**	-0.116**		
		(0.010)			(0.010)	(0.048)		
Connect. veget.						0.0282**		
						(0.014)		
Organic omnivore			-0.152				-0.273	-3.859***
			(0.190)				(0.175)	(0.817)
Flexitarian			-0.009				-0.057	-0.240

			(0.060)				(0.059)	(0.344)
Lactopesco			-0.079				-0.142	-1.026*
			(0.139)				(0.131)	(0.550)
Lactoovo			0.023				-0.078	-1.012*
			(0.113)				(0.110)	(0.572)
Vegan			0.505**				0.390**	-2.009**
			(0.216)				(0.190)	(0.947)
Connect. organic omniv.								0.947***
								(0.225)
Connect. flexitarian								0.058
								(0.098)
Connect. lactopesco								0.255
								(0.161)
Connect. lactoovo								0.257
								(0.158)
Connect. vegan								0.620***
								(0.214)
Constant	1.397***	1.389***	1.477***	0.876*	0.825*	1.227**	0.933**	0.975**
	(0.451)	(0.451)	(0.464)	(0.448)	(0.446)	(0.491)	(0.462)	(0.443)
F	7.840	7.590	6.610	9.210	9.300	9.400	8.130	11.76
R-squared	0.123	0.124	0.129	0.150	0.153	0.157	0.157	0.174

OLS Regression models predicting levels of subjective vitality employing control variables (parents' income, age, female gender, single status, relations, work status, area of residence, political wing, and discipline of study), connectedness to nature, vegetarian scale, vegetarian identity in its gradual phases, and the interaction variable of connected vegetarians. All models are globally significant at 1%, according to the F test. N=1068, significant predictors are displayed in bold font. Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

4.2.2 Vegetarian adherence, environmental commitment, and political orientation (objective 3)

Following the same structure as employed in section 4.2.1, we proceed to contrast hypothesis 3, previously defined in methodology (3.3), to answer objective 3 of our research. First, we take into account multicollinearity issues by presenting the matrix of correlation of the key variables and analysing the variance inflation factor (4.2.2.1) in our models, and second, we study the results to contrast hypothesis 3 (4.2.2.2). In order to achieve objective 3, we work with the sample subset of 227 observations.

4.2.2.1 Matrix of correlations

Before implementing the regression analyses, first, we proceed to study the correlational nature of our variables under consideration for our hypothesis 3 and present the matrix of correlations (see Table 10). To do so, we recall to our hypothesis 3, in which we estimated that pro-environmental behaviour is a positive predictor for vegetarian adherence, measured in current dietary consistency and future intention to continue with the meatless diet, and has a mediatory influence between vegetarian adherence and nature connectedness as well as between vegetarian adherence and political orientation.

In table 10 we show the matrix of correlations between vegetarian adherence, environmental commitment, political wing, and control variables. We observe that consistency and intention to continue with a meat-reduced diet are positively correlated; yet the correlation is not perfect. As for environmental commitment variables, pro-environmental behaviour and connectedness to nature are positively correlated, and both associate positively with meatless consistency and continuity. We detect a negative correlation between political wing and consistency (the more left-wing oriented the higher the meatless consistency) but no correlation has been found with continuity. Also, political wing associates negatively with environmental commitment variables. Regarding the food identity, it has a positive correlation with meatless consistency, pro-environmental behaviour, and connectedness to nature, but no link has been found with continuity or political wing. Considering the convenience of preparing meat-reduced dishes, we find that it correlates positively with consistency, continuity, and pro-

environmental behaviour, but has no correlation with connectedness to nature, political wing, or food identity. As regards motivations, they associate positively with vegetarian adherence, environmental commitment, and food identity, but have a negative relation with political wing and no correlation with convenience.

Table 10

Correlational matrix of variables related to hypothesis 3

	Consistency	Continuity	Pro- environ. Behaviour	Connectedness to Nature	Political Wing	Food Identity	Convenience	Motivations
Consistency	1							
Continuity	0.2110**	1						
Pro-environ. behaviour	0.3537***	0.2436***	1					
Connectedness to nature	0.2198***	0.1848**	0.3853***	1				
Political wing	-0.1944**	-0.1055	-0.1757**	-0.1725*	1			
Food identity	0.6298***	0.0533	0.3142***	0.1653*	-0.0893	1		
Convenience	0.1377*	0.2894***	0.2266***	0.1164	-0.0384	0.0712	1	
Motivations	0.3677***	0.1943**	0.364***	0.3107***	-0.1594*	0.4673***	0.0055	1

Second, in order to reach higher consistency of our results, we ran the variance inflation factor analysis (see Annex 2) to allocate possible issues of multicollinearity. As shown in Annex 2, we did not identify issues of existence of imperfect collinearity since all values fell far below 10, and, therefore, we proceeded with our planned regressions.

4.2.2.2 Results of our estimations on H3

Below, we show two tables (Tables 11 and 12) containing results of our analyses of vegetarian adherence in relation to environmental commitment and control variables. For these analyses we considered the sample of 227 participants, retaining from the main sample flexitarians and all vegetarians. The results of our estimations related to hypothesis 3 are organized according to the measure of vegetarian adherence, accounting for consistency of meat avoidance in three days prior to survey and intention to continue with a meat-reduced diet within the scenario of 1-2 years. First, we analyse *consistency of meat avoidance* (see Table 11), for which we present hierarchical regression models to allocate its predictive factors. In the next step of our analysis of meatless consistency, we introduce results of our mediation analyses considering the mediatory influence of pro-environmental behaviour between connectedness to nature and meat avoidance and between political orientation and meatless consistency.

Second, we describe the results on the predictive factors for *intention to continue with a meat-reduced diet* (see Table 12). As with meat avoidance, we show results of our mediation analyses considering the mediatory influence of pro-environmental behaviour between nature connectedness and intention to continue with a meat-reduced diet and between nature connectedness and political orientation. Overall, all models are globally significant, and adjusted R-squared ranges from 15% to 25% for meatless consistency, and from 16% to 36% for intention to continue the diet, with the lowest values for the first regression model and the highest one for the third hierarchical regression model.

According to hypothesis 3, we estimated that pro-environmental behaviour would be a positive predictor for vegetarian adherence. Furthermore, we hypothesized that pro-environmental behaviour mediates the relationship between nature connectedness and vegetarian adherence (H3.1) and also between political orientation and vegetarian adherence (H3.2). Tables 11 and 12 indicate that pro-environmental behaviour relates

positively to vegetarian adherence. In consequence, hypothesis 3 can be accepted. In the following sections, we will proceed to detail our results according to meatless consistency and continuity and also to contrast H3.1 and H3.2.

Consistency of meat avoidance

Our estimation results of three-step hierarchical regression models show that, over and above all other predictors, higher pro-environmental behaviour and motivation to avoid meat out of concern for animals predicted higher meat avoidance (step 2 and 3)—that is, lower consumption of meat in the past three days (see Table 11). Valuable to note is that one’s food identity, namely vegetarian versus flexitarian, did not predict level of meatless consistency, and no link was found for perceived convenience or demographic variables (age, gender, and parent’s income) that were added in the second and third step, respectively. Therefore, we observe that the extent to which a person consistently avoids meat on a daily basis is more related to his/her pro-environmental behaviour and animal motivation rather than one’s self-identification to food identity group such as flexitarian versus vegetarian.

Table 11
Predictors for meat avoidance

Predictor	<i>b</i>	SE <i>b</i>	β	R ²	<i>p</i>
Step 1				15%	
Pro-environmental behaviour	0.58***	0.13	0.30		< .001
Connectedness to nature	0.18	0.12	0.11		0.115
Food identity	0.26	0.15	0.11		0.089
Step 2				25%	
Pro-environmental behaviour	0.37**	0.13	0.19		0.005
Connectedness to nature	0.06	0.12	0.04		0.596

Food identity	-0.02	0.16	- 0.01	0.918
Animal motivation	0.88^{***}	0.18	0.37	< .001
Health motivation	0.02	0.15	0.01	0.901
Social motivation	0.08	0.25	0.02	0.741
Taste motivation	0.25	0.21	0.07	0.243
Convenience	0.24	0.16	0.10	0.128
Step 3				25%
Pro-environmental behaviour	0.35^{**}	0.14	0.19	0.009
Connectedness to nature	0.03	0.12	0.02	0.791
Food identity	-0.04	0.16	- 0.02	0.818
Animal motivation	0.90^{***}	0.15	0.38	< .001
Health motivation	0.06	0.15	0.02	0.692
Social motivation	0.06	0.25	0.01	0.812
Taste motivation	0.23	0.22	0.06	0.308
Convenience	0.22	0.16	0.09	0.176
Age	0.01	0.02	0.04	0.485
Gender	0.05	0.17	0.02	0.780

Ordinary least squares regression models predicting level of meat avoidance in the past three days, with a higher score reflecting higher dietary consistency (i.e., lower meat consumption). Dietary status represents status as flexitarian versus vegetarian, with flexitarian coded as 0 and vegetarian coded 1. Gender represents status as man versus woman, with man coded as 0 and woman coded as 1. Significant predictors are displayed in bold font.

Mediation analyses for consistency of meat avoidance

Since our hypothesis 3 was supported suggesting that pro-environmental behaviour is a positive predictor for meatless consistency in the past three days, consequently, we proceeded with our planned mediation analyses that conceptualize pro-environmental behaviour as a mediator. Through the means of two separate mediation models, one for connectedness to nature and another for political orientation (revisit Figure 13), we tested whether pro-environmental behaviour would explain why feeling more connected to nature (H3.1) and being more left-wing oriented (H3.2) may predict higher meatless consistency.

As regards connectedness to nature, our findings on mediation analysis indicate that higher connectedness to nature predicted higher meatless consistency, $\beta = 0.22$, $p < .001$. Higher connectedness to nature also predicted higher pro-environmental behaviour, $\beta = 0.40$, $p < .001$. Higher pro-environmental behaviour, in turn, predicted higher meatless consistency, $\beta = 0.30$, $p < .001$, controlling for connectedness to nature. Here, the direct effect of connectedness to nature on meatless consistency was no longer significant, $\beta = 0.11$, $p = .115$, when controlling for pro-environmental behaviour. A test of the indirect effect of connectedness to nature on meatless consistency through pro-environmental behaviour—conducting using path analysis via structural equation modelling with the lavaan package in R—was significant, $p < .001$, 95% CI [0.10, 0.31], suggesting that pro-environmental behaviour fully mediated the link between connectedness to nature and meatless consistency. In consequence, our H3.1 for meatless consistency can be accepted.

Analysing our results considering political orientation, we find that more left-wing political orientation predicted higher meatless consistency, $\beta = 0.19$, $p = .006$. More left-wing political orientation also predicted higher pro-environmental behaviour, $\beta = 0.18$, $p = .007$. Higher pro-environmental behaviour, in turn, predicted higher meatless consistency, $\beta = 0.31$, $p < .001$, controlling for political orientation. The direct effect of political orientation on meatless consistency was reduced but remained significant, $\beta = 0.13$, $p = .048$, when controlling for pro-environmental behaviour. A test of the indirect effect of political orientation on meatless consistency through pro-environmental behaviour was significant, $p = .013$, 95% CI [0.01, 0.08], suggesting that pro-environmental behaviour partially mediated the link between political orientation and meatless consistency. In consequence, our H3.2 for meatless consistency can be partly accepted.

Intention to continue with a meat-reduced diet

Our estimation results of three-step hierarchical regression models show that, over and above all other predictors, higher pro-environmental behaviour, lack of social motivation, and higher perceived convenience predicted that participants were more likely to intend to continue with a meat-reduced diet within the future scenario of 1-2 years (see Table 12). As for food identity, controlling for vegetarian versus flexitarian status, it predicted level of intention to continue meat-reduced diet only in the second step of hierarchical regressions, but was not significant in the final step. Similar as with meatless consistency, no link was detected for demographic variables (age, gender, and parent's income), however, we find that perceived convenience associates positively with intention to continue with a meat-reduced diet, which is in line with the results of the matrix of correlations. Therefore, we observe that intention to continue with a meat-reduced diet is positively associated with one's pro-environmental behaviour and perceived convenience to prepare meatless dishes, and negatively related to social motivation.

Table 12

Predictors for intention to continue meat-reduced diet

Predictor	<i>b</i>	SE <i>b</i>	Odds Ratio	R ²	<i>p</i>
Step 1				16%	
Pro-environmental behaviour	1.54	0.45	4.66^{***}		< .001
Connectedness to nature	0.33	0.34	1.4		0.324
Food identity	0.95	0.54	2.59		0.08
Step 2				33%	
Pro-environmental behaviour	1.34	0.52	3.80^{**}		0.010
Connectedness to nature	0.09	0.44	1.1		0.832
Food identity	1.30	0.65	3.66[*]		0.045
Animal motivation	0.96	0.76	2.6		0.207
Health motivation	-0.80	0.54	0.45		0.139

Social motivation	-1.49	0.72	0.23*	0.039
Taste motivation	1.46	1.19	4.32	0.219
Convenience	2.07	0.54	7.94***	< .001
Step 3				36%
Pro-environmental behaviour	1.23	0.52	3.42*	0.018
Connectedness to nature	0.16	0.47	1.18	0.726
Food identity	1.19	0.65	3.28	0.069
Animal motivation	1.08	0.78	2.96	0.162
Health motivation	-0.77	0.57	0.47	0.176
Social motivation	-1.56	0.73	0.21*	0.031
Taste motivation	1.62	1.21	5.04	0.182
Convenience	1.94	0.55	6.97***	< .001
Age	0.12	0.12	1.13	0.317
Gender	-0.61	0.64	0.54	0.337
Parents' income	-0.01	0.13	0.99	0.928

Logistic regression predicting intention to continue meat-reduced diets in the near future (1-2 years). Intention to continue is coded as 1; intention to discontinue is coded as 0. Food identity represents status as flexitarian versus vegetarian, with flexitarian coded as 0 and vegetarian coded 1. Gender represents status as man versus woman, with man coded as 0 and woman coded as 1. Significant predictors are displayed in bold font.

Mediation analyses for intention to continue with a meat-reduced diet

Since our hypothesis 3 was supported suggesting that pro-environmental behaviour is a positive predictor also for intention to continue with a meat-reduced diet in the near future, consequently, we proceeded with our planned mediation analyses that conceptualize pro-environmental behaviour as a mediator. Through the means of two separate mediation models, one for connectedness to nature and another for political

orientation (revisit Figure 13), we tested whether pro-environmental behaviour would explain why feeling more connected to nature (H3.1) and being more left-wing oriented (H3.2) may predict intention to continue with a meat-reduced diet.

As regards connectedness to nature, stronger connectedness to nature predicted intention to continue one's meat-reduced diet, $OR = 2.12, p = .014$. Higher connectedness to nature also predicted higher pro-environmental behaviour, $\beta = 0.40, p < .001$. Higher pro-environmental behaviour, in turn, predicted intention to continue one's meat-reduced diet, $OR = 4.66, p < .001$, controlling for connectedness to nature. The direct effect of connectedness to nature on intention was no longer significant, $OR = 1.40, p = .324$, when controlling for pro-environmental behaviour. Distribution-of-the-product confidence limits for the indirect effect of connectedness to nature on intention to continue with a meat-reduced diet through pro-environmental behaviour did not include zero, 95% CI of OLS-scaled regression coefficients [0.42, 1.80], suggesting that pro-environmental behaviour fully mediated the link between connectedness to nature and intention to continue one's meat-reduced diet. In consequence, our H3.1 for intention to continue meat-reduced diet can be accepted.

Analysing our results on political orientation, we find that more left-wing political orientation predicted intention to continue one's meat-reduced diet, $OR = 1.30, p = .040$. More left-wing political orientation also predicted higher pro-environmental behaviour, $\beta = 0.18, p = .007$. Higher pro-environmental behaviour, in turn, predicted intention to continue one's meat-reduced diet, $OR = 4.69, p < .001$, controlling for political orientation. The direct effect of political orientation on intention to continue with a meat-reduced diet was no longer significant, $OR = 1.18, p = .204$, when controlling for pro-environmental behaviour. Distribution-of-the-product confidence limits for the indirect effect of political orientation on intention to continue with a meat-reduced diet through pro-environmental behaviour did not include zero, 95% CI of OLS-scaled regression coefficients [-0.43, -0.04], suggesting that pro-environmental behaviour fully mediated the link between political orientation and intention to continue one's meat-reduced diet. In consequence, our H3.2 for intention to continue with a meat-reduced diet can be accepted.

5. Discussion

This chapter is structured into three parts. In section 5.1 we discuss on the general aspects of the sample referring to its representation, age, and gender distribution and we comment on the motivational aspects of meat-reducers who constitute the subsample. In section 5.2 we proceed to discuss the three lines of hypotheses according to the specified aims of our study. And finally, in section 5.3 we pay a special attention to public policies, future research directions, and limitations of our study.

5.1 General discussion on the sample

We acknowledge the fact that our sample is oriented to a specific profile. Our results from descriptive statistics of general sample show that approximately 7% of interviewees are vegetarians (lacto-pesco and lacto-ovo), 13% are flexitarians, 2% are organic omnivores, and only 1% constitutes vegan identity being the vast majority omnivores (77%). In spite of detected vegan and vegetarian minority in our sample, our data show the tendency of current representation of plant-based dieters in the Western world. Regarding vegetarians, European polls estimate approximate rates of vegetarians of 3% in the United Kingdom, 6% in Ireland, 9% in Germany, 8% in Switzerland, 8.5% in Israel, 8% in Canada, 3% in USA, 1-2% in New Zealand, and 3% in Australia (Ruby 2012; Schenk et al.2018). Vegans represent 1 % in the United Kingdom (The Vegan Society, 2020) and a similar representation of vegans we find in other European countries (Spain, Italy, France, Germany, Sweden, Poland, and Czech Republic) (Statista, 2020). Therefore, our sample of Spanish vegans is similar to the proportion of vegans in Europe as well as to the representation of vegetarians in other countries.

As regards gender, we work with a stronger female representation (first sample 62% and second sample 72%), which is common in vegetarian studies (Janda & Trocchia, 2001; Michalak, Zhang & Jacobi, 2012) due to causes such as gender role and symbolism of meat related to male identity (Vegetarian Times, 2008; Schenk, Rössel & Scholz, 2018). Regarding the age of the sample, our participants are young adults that according to previous evidence are more likely to follow vegetarian lifestyles than older population (Twigg, 1979; Janda & Trocchia, 2001). As for the educational level, our sample is

based on undergraduates, which is in line with previous studies confirming that young educated individuals represent a gradually expanding and trend-setting group for vegetarianism (Maurer, 1997; Schenk, Rössel & Scholz, 2018).

Considering the motivational aspect of vegetarianism, we find that there is a tendency in reduction of variety of causes to follow a vegetarian diet as long as the vegetarian identity intensifies. This means that flexitarian and lacto-ovo vegetarians experience all type of motivations (health, taste, social, and animal) while vegans relate mostly to animal motivation. These findings are in line with the fact that vegetarians experience a progressive transformation in their motivational journey where initial reasons are enriched with new causes, which evolve throughout the time to guarantee higher dietary consistency (Ruby, 2012; Timko, Hormes & Chubski, 2012).

We identify in our sample of meat-reducers that the concern for animals is the strongest driver in the case of vegans. This is supported by previous evidence suggesting that animal welfare and feelings of guiltiness linked to killing are the strongest motivators for people to choose food (Deckers, 2009) and become the prevalent vegetarian motivation (Neale et al., 1993; Ruby, 2012). Our results confirm that in order to intensify the vegetarian identity, individuals should strongly relate to animal welfare. Also, people with strong vegetarian identity are mainly driven by animal causes. This finding could serve to private and public enterprises to help them articulate more effective campaigns by focusing on animal motivation rather than health or taste motives when targeting strong vegetarian identities.

5.2 Discussion of hypotheses

In this dissertation work we approached to better understand the complex relationship of vegetarianism and subjective well-being, measured as life satisfaction, emotional well-being, and subjective vitality, linked to objective 1. We examined the influence of connectedness to nature on the link between vegetarianism and subjective well-being that relates to objective 2. And we studied the predictive factors for vegetarian adherence, assessed as short-term consistency and long-term intention to continue with a meat-reduced diet, employing pro-environmental commitment, which associates to

objective 3. These specific aims of our study lead us to formulate the following hypotheses. First, we expected a negative link between vegetarianism and subjective well-being. Second, we theorized that connectedness to nature would moderate the relationship between vegetarianism and subjective well-being. And third, we hypothesized that pro-environmental behaviour would predict both aspects of vegetarian adherence and also moderate its link with connectedness to nature and political orientation.

5.2.1 Discussion of hypothesis 1

Our first aim was to study the relationship of individuals who self-identify as vegetarians and people who follow diets with high vegetarian scale and their levels of subjective well-being that we measured as perceived levels of life satisfaction, emotional well-being, and subjective vitality. We hypothesized a negative link between vegetarianism and subjective well-being that would differ according to the measure under consideration. In the following paragraphs, we proceed to discuss our results for to each dimension of subjective well-being.

Regarding life satisfaction, our results show that the vegetarian scale, which is defined as a self-assessed vegetarian dietary pattern, does not promote life satisfaction but neither has significant relation with emotional well-being nor subjective vitality. Our findings show that as for the dimension of cognitive well-being, individuals who rate high on the vegetarian scale do not convert this pro-environmental behaviour into an asset for happiness. Previous evidence suggests that vegetarianism conceptualized in its plant-based dieting without committing to the vegetarian identity generally leads to gains in subjective well-being (Agarwal et al., 2015; Mujcic & Oswald, 2016; Conner et al., 2017). However, analysing our results and considering separately vegetarian scale from vegetarian identity, we find that as regards vegetarian scale, assessed as dietary consistency with plant-based dietary pattern, individuals tend to experience lower life satisfaction.

When analysing the aspect of self-described food identity, we find that flexitarians experience lower life satisfaction than other food identities. Nevertheless, vegans enjoy

higher subjective vitality. And lacto-pesco vegetarians have lower emotional well-being. Combining our results from estimations and descriptive statistics, we identify that lacto-pesco vegetarians who have lower emotional well-being also experience reduced relations with others (revisit Figure 33). We believe that self-determination theory (Deci & Ryan 2000; Ryan & Deci, 2001) that proposes the basic psychological needs fulfilment in order to achieve well-being, growth, and vitality might explain this lower emotional wellness due to unsatisfactory basic need for relatedness.

Therefore, our hypothesis 1 can be accepted for the dimension of life satisfaction considering the vegetarian scale and the identity of flexitarians. As for the measure of emotional well-being, hypothesis 1 can be supported for the vegetarian identity of lacto-pesco vegetarians. However, our findings show that vegans do not experience hindered levels of cognitive or emotional well-being that is in line with the work of Lavalley and colleagues (2019) who could not relate significantly vegetarianism to mental well-being. In addition, we find that vegans are more vital than other food identities, which is in accordance with the work of Conner and colleagues (2017).

As regards the aspect of vegetarian identity, our results support previous works that identified differences in findings allocating both positive and negative results in the vegetarianism-subjective well-being link (Beezhold & Johnston, 2012; Forestell & Nezelek, 2018; Lavalley et al., 2019). Also, our hypothesis 1 could not be supported for all vegetarian identities, which confirms previous evidence that suggests analysing results between vegans, semi-vegetarians/flexitarians, and omnivores separately (Timko, Hormes & Chubski, 2012; Rosenfeld 2018).

Since our results have identified a general negative tendency in the relationship between vegetarianism and subjective well-being except for the vegan identity (H1), we concur with the past research, which constitutes a puzzling result given the positive impact of vegetarianism on the environment. In other words, being happy while taking care of the environment, known as the well-being dividend (Jackson 2005), seems not to be achieved in the case of vegetarianism. Furthermore, our results translate into that we cannot completely accept hypothesis 1, but these findings can support our hypothesis 2.

5.2.2 Discussion of hypothesis 2

Our second aim was to examine the role that connectedness to nature plays on the link between vegetarian commitment and subjective well-being. Therefore, we hypothesized that connectedness to nature would moderate the relationship between vegetarianism and subjective well-being. In fact, all three dimensions of subjective well-being are negatively correlated with the vegetarian scale when introducing connectedness to nature, which suggests that connectedness to nature has a role to play in the relationship (H2). Therefore, we hypothesized that the missing piece for the well-being dividend is the connection to nature, which might be a possible means through which some vegetarians would experience higher levels of subjective well-being.

In general, results replicate those from the literature with respect to connection to nature (positive effect on subjective well-being) and the different vegetarian variables (negative and in some occasions non-significant or positive) for different model specifications, as we argued in the past subsection. Meanwhile, when considering the combined effect of vegetarianism and connection to nature via interactions, on some occasions vegetarianism has a positive influence on subjective well-being, in the event that high connectedness to nature is reached. Results show that people highly connected to nature and rating high on the vegetarian scale experience stronger subjective vitality.

In addition, our findings report that in the case of vegan identity, an increased subjective well-being in its facet of life satisfaction and subjective vitality relies on a strong connection to nature. Vegetarian identity of lacto-pesco vegetarians that in hypothesis 1 was linked to lower emotional well-being, now once having considered the influence of strong nature connectedness experiences greater emotional well-being. The models indicate that an increased level of connectedness to nature is approximately 4, on a scale from 1 to 5, but in the case of lacto-pesco vegetarians the level of connectedness to nature needs to be very elevated (estimations indicate 4.9 on a 1 to 5 scale).

Interesting to note is also the interaction of organic omnivores with the variable of connectedness to nature and its association with increased levels of subjective well-being in all its dimensions. In this vein, the identity of organic omnivore also relates highly to the environment on the connectedness-to-nature scale being similar to vegans

in the aspect of connectedness (revisit Figure 20). Therefore, in this particular case of food identity of meat reducer, based on quality meat intake, we find our hypothesis 2 fully supported. However, past evidence suggests that conscientious omnivores that consume organic meat do not commit consistently to sustainable consumption since they violate their diet frequently, believe less in animal rights, and accept animal factory-farming conditions without feelings of guilt (Rothgerber, 2015).

Also, valuable to notice is that when we introduce the variable of nature connectedness into the relation of vegan subjective well-being, vegans who previously enjoyed greater vitality now experience negative association. Therefore, it is the particular case of vegan identity that channels the ecological commitment where nature connectedness behaves as an omitted variables bias. Our finding is in accordance with previous evidence that confirms that it is the vegetarian self-identity that channels ethical, ecological, and health commitments (Schenk, Rössel & Scholz, 2018). In sum, hypothesis 2 cannot be fully accepted, since the mediating role of connectedness to nature seems to positively influence, on some occasions, vegetarian-related variables with gains in subjective well-being, particularly in the case of vegan and lacto-pesco vegetarian food identities.

Not only the relation to the environment but also the influence of personal relations remains constant and positively associated to all measures of happiness that aligns with the concept of relatedness need specified by self-determination theory. Therefore, relatedness development becomes an important factor to evaluate especially in its facet of environmental commitment so as to better understand the complexity of happiness perceptions among vegetarians and identify routes to sustainable lifestyles.

Those results can also be interpreted in a holistic way. People are constructed biologically, psychologically, and socially by their food choices (Fischler, 1988; Rozin, Markwith & Stoess, 1997; Devine, 2005). These food decisions go beyond the individual level since our actions have direct impact on the surrounding environment. Our study suggests that the way we decide to eat is interconnected with our perception of the environment. Therefore, people who prefer to skip meat from their dishes also relate more to the environment via stronger connectedness to nature and higher engagement into pro-environmental behaviour. This higher awareness not only brings benefits for their personal health but also for collective environmental preservation.

However, evidence informs that vegetarians may suffer from lower subjective well-being. Possible causes triggering lower vegetarian happiness link to relatedness aspects such as social minority, perception of the world as unfair along with psychological disorders. In consequence, we approached this challenge expanding the relatedness perspective at social level with relatedness at environmental level by introducing the influence of natural habitat on the individual wellness. Connectedness to nature is proved to influence positively on people's well-being (Nisbet, Zelenski & Murphy, 2011; Helliwell, 2014) for its restorative effects on mental well-being, becoming thus affiliating with nature a basic human need (Howell & Passmore, 2013). By these means we could allocate a positive mediatory influence of nature intertwined with specific food identities that can enhance their subjective well-being despite identifying as a vegetarian.

Furthermore, since vegetarianism connects us with nature, it also could serve as a vehicle to reconnect people living in urban environments with natural habitat and thus minimize collective impact and harm on the planet (Fox, 2000). Current urban lifestyles disconnect people from nature, which not only deteriorates the environment but also diminishes human happiness. Hence, it is relevant to establish a reconnection with the natural habitat in order to foster personal commitment to protect the environment (Nisbet & Zelenski, 2011; Soga & Gaston, 2016). Our interconnectedness with the planet builds on our ecological identity that encloses self, human, and non-human beings and thus enhances pro-environmental actions (Clayton, 2003). The relationship goes both ways, since nature related individuals tend to engage in vegetarianism, humanitarianism, animal defence, and environmentalism (Nisbet, Zelenski & Murphy, 2009).

Our findings support the idea that people can increase their subjective well-being despite engaging in pro-environmental behaviours such as vegetarianism while keeping high connectedness to nature. This result is supported by previous works informing that through the means of altruistic activities, individuals can contribute to collective wellness and simultaneously foster their subjective well-being (Binder & Blankenberg, 2017). Furthermore, by committing to pro-collective behaviour or voluntary simplicity people can enhance their life satisfaction via good deeds to others and the environment (Dhendra, 2019). In this line, lifestyles based on voluntary simplicity promote a more

sustainable way of life less focused on consumption and more centred on personal growth, community, and connection with nature applied to urban and rural environments (Brown & Kasser, 2005; Kasser, 2009).

Also, valuable to note is the importance of considering the developmental phase of both identities, personal and ecological, which link to the transformational process of dietary change (Rosenfeld & Burrow, 2017b). Therefore, in some occasions if we analyse the effects of personal identity and ignore the importance of ecological identity, our results may suffer variations. Consequently, some studies show that vegetarians are happier than omnivores but wide evidence confirms the opposite, possibly due to omitting the ecological identity of vegetarians. Yet the vegetarian identity and its transformational process go through evolutionary phases (Shapiro, 2015). For example, if the ecological identity is not developed yet, then the vegetarian identity may still experience reduced subjective well-being. However, if the ecological identity is robust, then it interconnects with vegetarian personal identity accruing positive effects on overall individual well-being. This is in line with previous research informing that people who opt for more ecologically responsible lifestyles are happier and hence, contribute to individual and collective well-being simultaneously (Brown & Kasser, 2005).

In addition, it is also important to acknowledge that human beings have nourished as omnivores for a long period of time; however, people can thrive on and also need different diets to adapt to changes in the environment. Therefore, the need for nutritional diversity could propel people to explore more innovative and diverse perspectives to reconnect again with natural ways of being. Vegetarianism may serve as a vehicle to reduce the omnivore's paradox and promote a sustainable transformation of our security-based lifestyles. By performing conscious changes in our diet we can bring more diversity into our life and also preserve the biodiversity of the planet. The transition is needed since the current state of the environment we inhabit is already deteriorated and performs negative influences on people's well-being.

Therefore, our behaviour should acknowledge short and long-term consequences of our choices at individual and collective level. Vegetarianism here offers a harmonious co-habitation with other living beings and this way of life may free us to reconnect with who we are in more positive, life-supporting ways that are prosperous for all living

beings involved (Fox, 2000) and triggers our goals towards personal growth and life purpose (Fox & Ward, 2008; Hill et al., 2010). This higher purpose or fulfilment of human potential can be reached through a higher connection with a self that goes beyond oneself and connects us to a common spirit or community that nourishes all the living beings with vitality and energy aligning thus with Aristotle's perspective on meaningful human happiness from the perspective of vegetarianism (Waterman, 1993).

5.2.3 Discussion of hypothesis 3

Our third aim was to analyse the influence of pro-environmental behaviour on people's short and long-term adherence, assessed as consistency and intention to continue with a meat-reduced diet, respectively, in relation to connectedness to nature and political orientation so that we can identify factors promoting vegetarian adherence over time. Therefore, we hypothesized that pro-environmental behaviour would predict positively vegetarian adherence in its both facets and also mediate the relationship between connectedness to nature and vegetarian adherence and between political orientation and vegetarian adherence.

In terms of meatless consistency or short-term vegetarian adherence, our results report that only 33% of the subsample's participants are actually consistent with their meat-reduced diet, which is in line with past research confirming that many self-identified vegetarians do not follow their diet consistently (Ruby, 2012) to the extent that 51% of self-identified vegetarians reported having eaten meat at least once since becoming vegetarian (Rosenfeld & Tomiyama, 2019). As for the intention to continue a meat-reduced diet or long-term vegetarian adherence, our data show that 90% of the subsample's participants intend to adhere to a more vegetarian diet in the long term. Therefore, our work aims to approach the vegetarian adherence challenge from the perspective of increased pro-environmental actions in order to guarantee more sustainable lifestyle choices over time. Consequently, we focus on the factors conditioning the dietary consistency and intention to continue with the meat-reduced diet in the future accounting for pro-environmental commitment variables and relating vegetarian adherence with nature connectedness as well as with political orientation.

Our study revealed three main findings. First, pro-environmental behaviours positively predict vegetarian adherence, in terms of both short-term meatless consistency as well as long-term intention to continue dietary adherence. Second, pro-environmental behaviours mediated the link between connectedness to nature and vegetarian adherence, fully explaining why people who feel more connected to nature commit stronger to meat-reduced diet and are more likely intend to continue this diet in the near future. Third, pro-environmental behaviours also mediated the link between political orientation and vegetarian adherence, explaining why left-wing oriented people commit stronger to meat-reduced diet (partial mediation) than right-wing oriented individuals and are also more likely intend to continue their meat-reduced diet in the future scenario of 1-2 years (full mediation).

We have identified pro-environmental behaviour as a unique predictor of vegetarian adherence over and above the effects of dietary motivation, convenience, and demographics, which provides us with promising implications on how to promote people's commitment to vegetarian diets more successfully. However, we acknowledge the correlational nature of our data and we note that if causal mechanisms are indeed driving the relationship between pro-environmental behaviour and vegetarian adherence, then our data suggest that an effective strategy for enabling people to adhere to vegetarian diets is to make them value and engage into pro-environmental behaviours more in general. An interesting implication of this result is that we do not need to motivate people explicitly to follow a vegetarian diet in order to increase their vegetarian adherence.

This can be possibly caused by the gradual development and interconnectedness of personal and ecological identity through the means of a dietary shift towards the environmentally friendlier option for human nutrition (Rosenfeld & Burrow, 2017b). For example, vegetarians integrate higher ecological causes with their personal identity so as to fulfil the purpose to benefit the planet and other living beings (Fox, 2000) and thus can develop a stronger connection with their life purpose, self- acceptance (Damon, Menon & Bronk, 2003), and now even higher vegetarian adherence, too. We suggest that increasing the extent to which people value and engage into pro-environmental behaviour from a general perspective, without any specific mention of meat or vegetarian dieting, has the potential to bypass meat-eating rationalizations (Rothgerber,

2019) and can effectively improve vegetarian adherence over time. Additional research building on this notion can provide policy implications, ultimately informing how decision-makers allocate resources for environmental awareness and individual engagement in vegetarian eating patterns.

Also, valuable to note is that pro-environmental behaviour did predict vegetarian adherence but at small to medium effect sizes and was not the strongest predictor of neither short-term meatless consistency nor long-term intention to continue a meat-reduced diet. In line with this, we found that animal motivation was the strongest predictor for meatless consistency, and the lack of motivation to follow a meat-reduced diet for social influence together with convenience to follow vegetarian dieting were the strongest predictors for the intention to continue a meat-reduced diet.

Our results support previous findings that individuals with high animal motivation are more consistent in adhering to meatless diets (Rozin et al., 1997; Ogden et al., 2006; Rosenfeld, 2019) as well as they align with evidence reporting that social motivation and inconvenience may undermine one's commitment to meatless dieting (Menziez & Sheeshka, 2012; Plante et al., 2019). Therefore, in order to reach success in promoting vegetarian adherence, it may be most effective to target these variables in addition to pro-environmental behaviour engagement. However, a contribution from our study is that pro-environmental behaviour was the only factor that significantly predicted both short-term and long-term vegetarian adherence. In this line, targeting pro-environmental behaviour engagement may constitute an effective way to promote committed meat reduction over time.

Nevertheless, the precise mechanisms by which pro-environmental behaviour can promote vegetarian adherence still require further investigation. We understand that this effect may be driven by processes related to the self, including desires to affirm one's ecological identity (Naess, 1973), to avoid cognitive dissonance (Aronson, 1968), and to construct and fulfil a sense of purpose in life (Damon, Menon & Bronk, 2003; Hill, Burrow & Bronk, 2016; Hill et al., 2018). In this vein, when a person engages strongly in pro-environmental behaviour, following a vegetarian diet can become less effortful and require less tools of self-control due to self-based mechanisms that may naturally make vegetarian diet more appealing.

In addition to promoting pro-environmental behaviours, we also acknowledge the influence of the aspect of convenience to follow a vegetarian diet since adoption of meat-reduced diets is not a homogeneous process and it relies on the developmental phase of the vegetarian identity (Rosenfeld & Burrow, 2017a; Shapiro, 2015). For instance, a gradual adoption of vegetarian dieting can foster higher vegetarian adherence in comparison to radical shifts in diets and personal identities (Haverstock & Forgays, 2012). In this line, our results suggest that making people perceive vegetarian dieting as more convenient can enhance their intention to continue with a meat-reduced diet over time. This aligns with findings by Schenk and colleagues (2018), who likewise report a positive relationship between convenience and vegetarian adherence. Identifying these and other factors promoting vegetarian adherence could lead to increased levels of meatless consistency that constitutes a challenge for many self-identified vegetarians (Ruby, 2012).

In our study we were also particularly interested in political orientation and connectedness to nature. As for political orientation, our findings inform that left-wing politically oriented individuals commit to vegetarian diets stronger than right-wing individuals, which may be possibly due to their higher pro-environmental behaviour engagement. This is in accordance with previous evidence suggesting that more liberally oriented individuals practice and are more committed to meat avoidance (Allen et al., 2000; Hodson & Earle, 2018; Rosenfeld & Tomiyama, 2020), which makes political ideology a relevant factor to include when working with vegetarian ecological identity and its link with vegetarian adherence (Lindeman & Sirelius, 2001, Rosenfeld, 2018).

Regarding connectedness to nature, our findings inform that people who felt more connected to nature were more committed to vegetarian diets, possibly because of their stronger pro-environmental behaviour. This aligns with previous evidence correlating positively connectedness to nature with vegetarianism (Twigg, 1979; Beardsworth & Keil 1992; Fox & Ward, 2008; Nisbet, Zelenski & Murphy, 2009). Therefore, we interpret this finding that by making people feel more connected to nature, it may foster their pro-environmental behaviour, which in turn supports their vegetarian adherence. This finding aligns with previous works reporting that the experience of feeling connected to nature may trigger engagement in pro-environmental behaviour (Mayer &

Frantz, 2004; Nisbet, Zelenski & Murphy, 2009; Hohle, 2014) but we amplified this perspective on short and long-term vegetarian adherence.

Interesting to note is the fact that we did not allocate a significant predictive role of vegetarian identity on meat-reduced adherence, which complements previous studies that affirm vegetarian identity to be an important step in building a solid foundation for dietary commitment (Ruby, 2012; Rothgerber, 2015; Schenk et al., 2018). Our findings provide a new perspective in this field of study regarding the vegetarian identity since it is not required to self-identify as a vegetarian in order to achieve higher meatless consistency and we suggest instead stronger engagement into pro-environmental behaviour, animal welfare as well as increased convenience of vegetarian dishes for the purpose of stronger vegetarian adherence. In addition, we again refer to the need of development of a robust ecological identity that frequently intertwines with the personal identity (Rosenfeld & Burrow, 2017b) and thus possibly promotes higher vegetarian adherence from the perspective of higher ecological awareness.

5.3 Public policies, limitations, and future research directions

Our findings have a direct political interpretation. A first implication for public policies is that while spreading vegetarianism is beneficial for the environment, it should be accompanied by actions that, at the same time, increase people's connection with nature in order to gain greater individual experienced well-being. In other words, our results suggest that connection with nature may reverse, on some occasions, the negative relationship between vegetarianism and subjective well-being. Our contribution aligns with evidence, which suggests that by adopting more connected lifestyles with nature one can reach increased meaning in life (Michalak et al. 2012; Forestell and Nezelek 2018). Consequently, more mindful cultures can contribute to people's well-being and life satisfaction (Dhandra, 2019), which we have confirmed from the vegetarian perspective. As a result, while targeting vegetarian individuals, we should consider their feelings of connectedness to nature in order to reach higher states of subjective wellness.

A second implication for public policy is the reduced complexity for policy interventions to promote sustainable lifestyles. Previous studies refer to considering

multiple social and environmental factors as for the intention to continue with vegetarian diets. Furthermore, evidence suggests working with emotions, cognitive dissonance, and socio-cultural factors as behavioural influencers. This obviously leads to excessive complexity for the design and implementation of sustainable strategies (Stoll-Kleemann & Schmidt, 2017). Consequently, our approach offers an easier solution for public promotion of pro-environmental behaviour that simultaneously enriches vegetarian individuals with higher levels of subjective well-being in the event they experienced decreased happiness.

A third implication for public policy is identifying factors promoting vegetarian adherence in order to reduce vegetarian meatless inconsistency over time (Ruby, 2012). For instance, strategies to improve vegetarian dieting could include structural changes by making vegetarian food more readily available, attractive, and affordable for the responsible consumer. This could translate in implementations such as more visible vegetarian display at food stores, connection with planetary well-being, reduced taxes on environmental meatless products, enriched nutritional information on vegetarian labelling, higher transparency in meat-based production processes, vegetarian menu options at school canteens and restaurants, as well as animal welfare campaigns. Also, individual reinforcements should be approached by enhancing self-efficacy to prepare meatless dishes more easily supporting new TV food programmes focused on vegetarian meals as well as encouraging local programmes that foster plant-based community activities.

A fourth policy implication is the spread of culture oriented towards nature as connectedness to the natural habitat fosters vegetarian subjective well-being to some extent and higher pro-environmental commitment intensifies vegetarian adherence enhancing thus collective well-being at long term. This would be particularly of interest in urban areas where the experience of individual connectedness to nature is reduced, which performs a negative influence on both individual and collective well-being (Nisbet, Zelenski & Murphy, 2011). Therefore, by the means of vegetarianism and its implicit interconnectedness with the natural environment (Fox, 2000), we could support sustainable activities in cities such as ecological gardening and create new spaces for local community engagement enhancing hence interconnectedness at social and environmental levels as well as dietary consistency over time.

Furthermore, this could also convert into a more appealing instrument for general public of omnivores who would be able to engage with vegetarians in more positive and productive ways (MacInnis & Hodson, 2017). As a result, people could reconsider their current lifestyles at the food level and through their engagement into more sustainable ways of life such as community gardening, conceive their reconnection to nature, which may eventually conduct to further development of greener cities. In this vein, new social movements expand further through the means of culture rather than political structure since the effort is directed on personal transformation, lifestyle changes, and identity reconstruction that people embrace easier (Evers, 2001). Vegetarianism here would serve as a vehicle to reconnect people with the environment and create a fertile soil for improved individual and collective well-being through the lens of active personal engagement into more conscious food choices.

A fifth implication of these findings on public policy relates to environmental sustainability that should be embraced by individual and collective contributions to ecological consciousness, pro-environmental behaviours, and perceived consumer effectiveness (Iyer, 1999) since consumers represent relevant sustainable agents by assuming their part as more responsible citizens who are willing to adopt long-term sustainable behaviours (de Bakker & Dagevos, 2012) that would lead to continuity of increased global well-being.

And the last policy implication that we mention in this dissertation work is directly related to vegetarian-oriented political parties. We propose encouragement to embrace perspective of nature connectedness within political programmes of parties already supporting animal welfare and vegetarianism. This could increase the communicational effectiveness with identities that already practice vegetarianism but also with citizens who are willing to adopt a vegetarian diet, but approaching from a less drastic angle such as animal rights activism and instead, supporting the connectedness to nature and to all living beings from a more positive message framing. Therefore, we would be able to foster the conversion towards a vegetarian-centred economy with individual and collective assets rather than continuing in the meat-based culture expansion that has no future perspective for generations to come (Steinfeld, Wassenaar & Jutzi, 2006; Fox, 2013) according to the guidelines of the United Nations, which demand a global move towards a vegan diet to preserve the planet (Alvaro, 2017).

Despite our efforts to provide robust results, there are certain limitations in our study. A first limitation of the current research is that it is centred on a concrete geographical area for a certain stratus of the population and therefore requires a validation of obtained effects outside of Spain. Consequently, we suggest comprising profiles with different demographics and covering culturally different parts of the world in future works. A second limitation is the study's cross-sectional nature, which undermines the causal inferences permitted. As a result of it, we cannot establish causal relations between subjective well-being and the independent variables. For instance, we cannot determine whether people experience greater vitality because they are vegans who are connected with nature, or whether happy people tend to become vegans and experience greater nature connectedness. Therefore, our findings can only be interpreted as correlations. In this line, it would be valuable to test experimentally and longitudinally whether changes in individuals' pro-environmental behaviour cause shifts in vegetarian adherence as well as whether changes in nature connectedness cause shifts in subjective well-being.

A third limitation is the use of self-reported short short-term dietary adherence, relying on participants' recalls of their meat intake in the three days prior to taking the survey. Although our research focused on meat-reducers' adherence to their already meat-reduced diet, a direct extension of our work would be to investigate the role of pro-environmental behaviour—along with nature connectedness and political orientation—among samples of individuals who do not currently limit their meat intake.

In addition, we encourage future investigations to consider separately the influence of psychological factors such as vegetarian self-described identity from individual behaviour such as dietary self-assessed consistency since both may lead to differences in the findings. Furthermore, we also acknowledge the relational aspect of vegetarianism in regards to the natural environment and other living beings that could play a compensating role on the levels of hindered subjective well-being but that needs further testing accounting for different profiles, cultures, and conditions to allocate more consistency in the results. Also, we suggest considering cognitive, hedonic, and eudaimonic aspects when studying vegetarian well-being since these may add more clarity focusing on different food identities. Additionally, further development of theories on vegetarianism should not only include behavioural aspects, but also include feelings, emotions, beliefs, motivations, and thoughts ideally monitored on an on-going basis that lead to vegetarian commitment via adopted sustainable lifestyle.

6. Conclusion

Vegetarianism constitutes not only a diet, but also a way of life and social movement currently in expansion worldwide. Since meat consumption negatively influences the environment, vegetarianism helps to preserve the health of ecosystems enhancing collective well-being. Yet individuals with internalized vegetarian identity tend to experience lower subjective well-being. Potential reasons for this include social stigmatization, underlying mental conditions, or perception of the world as unfair. In this dissertation, we explored the possibility that vegetarians who feel connected to nature enjoy higher subjective well-being, which aligns with objectives 1 and 2 of our study. To do so, we explored a sample comprising 1068 undergraduates and related vegetarian commitment accounting for vegetarian identity and vegetarian self-assessment scale, with connectedness to nature for three different measures of subjective well-being: life satisfaction, emotional well-being, and subjective vitality. We found that vegetarian subjective well-being is better understood through personal connection with the environment.

Our results suggest that connectedness to nature is positively related, and vegetarian commitment generally associates negatively to subjective well-being except for the identity of vegans who have greater vitality than other food identities. Also, we could not relate vegans with hindered levels of cognitive or emotional well-being, which supports previous evidence. However, vegans and lacto-pesco vegetarians experience greater life satisfaction while highly connected to nature. Additionally, lacto-pesco vegetarians also enjoy greater emotional well-being while highly connected to nature. Considering vegetarian scale, individuals rating higher experience increased subjective vitality when highly connected to nature. Therefore, we propose that advancement in policy implications should focus on the connection to the environment for achieving higher levels of subjective well-being while actively engaging in pro-environmental behaviours such as vegetarianism.

In this line, previous evidence suggests that vegetarianism conceptualized in its plant-based dieting without committing to the vegetarian identity generally leads to gains in subjective well-being. However, analysing our results and considering separately vegetarian scale from vegetarian identity, we found that as regards vegetarian scale, assessed as dietary consistency with plant-based dietary pattern, individuals tend to

experience lower life satisfaction. Nevertheless, when accounting for the vegetarian identity, we found that vegans are able to experience greater life satisfaction when strong interaction with nature is achieved.

As for the dimension of emotional well-being, our findings support the general negative tendency in subjective well-being that commonly experiences a person with vegetarian identity as is confirmed by our results in the case of lacto-pesco vegetarians. However, a possible trade-off for this lower emotional well-being can be reached through an elevated connectedness to nature. Regarding the subjective vitality, past evidence identified a strong link between individual physical health and improved vegetarian diet; however, we approached the subjective vitality of vegetarians from the perspective of conscious experience of possessing energy and vivacity that translates to both physical and psychological well-being. Our findings conclude that the particular case of the strictest vegetarian identity, vegans, enjoy higher subjective vitality than any other food identity. Furthermore, it is through the vegan identity and a high vegetarian scale that is canalized the ecological identity that associates strongly to nature, which consequently leads to gains in subjective vitality and therefore the individual experience of increased energy.

Our results support the current complexity in the evidence as concerns the link of vegetarian identity with subjective well-being since there are positive, negative, and non-significant correlations allocated in our work. Nevertheless, our contribution is the introduction of the role of connectedness to nature both on vegetarian identity and scale, concluding that high relatedness to the natural environment can offer a possible trade-off for hindered levels of life satisfaction, emotional well-being, and subjective vitality for some vegetarian identities. Therefore, the understanding of the vegetarian phenomenon is complex for its interconnected psychological, social, and environmental factors.

Furthermore, in our third objective of this study, we also approached the aspect of consistency and continuity of vegetarian diets since the presence of both components is required in order to design and implement effective strategies for a solid transition towards less meat-based culture. Since we are living in times impregnated by the urgent need to preserve the health of current ecosystems, we need to transform our lifestyles towards a more vegetarian-oriented diet, yet many individuals who decide to become

vegetarian fail and return to their habits of eating meat, which jeopardizes the vegetarian philosophy and a lasting collective well-being. In our study that focused on the subsample of meat-reducers, we identified pro-environmental behaviour as a significant predictor for both aspects of vegetarian adherence and allocated its mediatory value in promoting sustainable eating by encouraging people to appreciate the environment more in general and thus avoiding any potentially backlashing effect of specifically promoting meat reduction. By these means we would be able to simplify the spread of public interventions seeking a higher vegetarian dietary implementation at short and long-term.

In sum, we have identified that the link of vegetarian happiness is a complex matter for its interconnected nuances with personal, social, and relatedness factors (objective 1). We found that the experience of higher connectedness to nature can provide a possible trade-off for decreased levels of subjective well-being of specific vegetarian profiles (objective 2). In addition, by promoting pro-environmental behaviour, animal concern, and convenience we could trigger vegetarian short and long-term adherence enhancing dietary consistency and continuity, respectively, as well as robustness in autonomy that are intertwined with a successful commitment to vegetarianism (objective 3).

We believe that our novel findings within the field of vegetarianism, happiness, and adherence to vegetarian diet can constitute foundation to future research on the subject of vegetarianism considering not only the influence of accentuated reflexive identity of vegetarians but also their awareness of nature relatedness, which in turn can support more effective implementation of public policies on environmental preservation and general well-being management.

Therefore, in our work we identified factors that may enhance vegetarian subjective well-being as well as we allocated agents that promote vegetarian adherence over time, knowledge, which can ultimately be useful for building happier and more sustainable societies. If connectedness to nature and pro-environmental behaviour exhibit unique ties to subjective well-being and vegetarian adherence, respectively, then a promising next step for encouraging vegetarian lifestyles would be to develop and implement policy interventions that cultivate these feelings in individuals.

In conclusion, our findings suggest that by making people feel more connected to nature, they can increase their levels of subjective well-being, which may also

positively interact with the complex aspect of vegetarian happiness. Furthermore, feeling more connected to nature triggers people's engagement into pro-environmental behaviour, which in turn supports their higher vegetarian adherence over time. This result aligns with the theory exposed in our work, in which we suggest that vegetarianism may interconnect positively with individual and collective well-being and the link can be sustained from a long-term perspective, which constitutes an appealing potential to explore further in multiple dimensions of our human ambitious endeavours.

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Annexes

Annex 1: Survey design for the analyses in English language

The full online version of the questionnaire via Qualtrics is available in Spanish language in this link: https://webcim.qualtrics.com/jfe/form/SV_8HUI0Gb6Y2vI81n This survey was a part of a combined research integrating further aspects of pro-environmental behaviour and other personal characteristics that do not link to our research and therefore we specified below only questions that were employed in our particular case of study.

Q1- First of all, a question about your satisfaction with your life in general. (1 = completely unsatisfied, 10 = completely satisfied).

	0	1	2	3	4	5	6	7	8	9	10	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	11 (0)	
Completely dissatisfied											Completely satisfied	

Q2- Happiness can have different meanings for people, and we can agree more or less with the different conceptions of happiness. How much do you agree or disagree with the following statements on the meaning of happiness?

	1= Completely disagree	2=	3= neutral	4=	5= Completely agree
Happiness is to accept things as they are. (1)					
Happiness is a sense of acting properly in our relations with others and with us.					

(2)

Happiness is an unreachable ideal we can only try to approach. (3)

Happiness is in living a tranquil life, not looking beyond what is attainable. (4)

Happiness consists in fully exercising our capabilities. (5)

Happiness is being satisfied with what I have and what I am.

(6)

Happiness is to seize every moment in life.

(7)

Happiness is to enjoy what one has attained in life. (8)

Q3- This scale consists of a series of words that describe different feelings and emotions. Read each word and mark the appropriate answer for you in the space provided. Indicate how you felt during the last seven days:

Indicate the extent you have felt this way over the past week.		Very slightly or not at all	A little	Moderately	Quite a bit	Extremely
PANAS 1	Interested	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
PANAS 2	Distressed	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
PANAS 3	Excited	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
PANAS 4	Upset	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
PANAS 5	Strong	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
PANAS 6	Guilty	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
PANAS 7	Scared	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
PANAS 8	Hostile	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
PANAS 9	Enthusiastic	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
PANAS 10	Proud	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
PANAS 11	Irritable	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
PANAS 12	Alert	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
PANAS 13	Ashamed	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
PANAS 14	Inspired	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
PANAS 15	Nervous	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
PANAS 16	Determined	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
PANAS 17	Attentive	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
PANAS 18	Jittery	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
PANAS 19	Active	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
PANAS 20	Afraid	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5

Q4- Here you will find a list of actions. Specify how often do you perform the following actions:

	1= very little or nothing	2= a little	3= moderately	4= enough	5= extremely	99= not applicable
Turn off lights in rooms that are not being used. (1)						
Wearing more clothes when it's cold at home rather than turning on or turning up the heating system. (2)						

Decide not to buy something because it has too much packaging material. (3)

Buy recycled products such as toilet paper or recycled paper tissues. (4)

Carry your own shopping bag. (5)

Separate the garbage. For example, paper, plastic, and glass. (6)

Using public transportation (e.g. bus, train) instead of using the car. (7)

Walking or cycling for short distances (up to about 3 - 4 km). (8)

Take fewer flights when possible. (9)

Participate in demonstrations in support of the environment. (10)

Reduce consumption of

meat or animal products. (11)

Buy organic or eco-labeled food. (12)

Buy organic or eco-labeled products (furniture, clothing). (13)

Prefer to buy local products. (14)

Throw food in the trash. (15)

In general, try to reduce consumption in everyday life. (16)

Q5- Do you agree with the proverb: "We are what we eat"?

- a. Yes, it's absolutely true.
- b. I agree, but only partially.
- c. I do not agree.

Q6- On your usual diet: please indicate on a scale of 1 to 10 your eating habits from omnivore to vegan, where 1 means to be completely omnivorous (eat all products of animal origin) and 10 completely vegan (eat no products of animal origin).

	1	2	3	4	5	6	7	8	9	10	
--	---	---	---	---	---	---	---	---	---	----	--

Completely
omnivore

Completely
vegan

Q7- Please select the option that best describes your diet:

- a. Omnivorous: eats meat and its derivatives, fish and seafood, as well as fruits, vegetables and cereals.
- b. Organic omnivore: buys organic meat.
- c. Flexitarian: does not eat meat at least one day a week.
- d. Lacto-pesco vegetarian: eats dairy products, fish and seafood, but does not eat meat.
- e. Lacto-ovo vegetarian: eats eggs and dairy products but does not eat fish, seafood, white, or red meats.
- f. Vegan: Eats fruits, vegetables, legumes and cereals but does not eat red or white meats, dairy products, eggs, seafood, and fish.

Q8- In the past 3 days, how many times did you eat red and white meats (pork, chicken, beef, meat products such as ham, jelly, hamburgers, etc.)?

_____times

Q9- If you have previously replied that you belong to a vegetarian (lacto-pesco, lacto-ovo), flexitarian or vegan group, please indicate how long you have been on this diet:

_____years

Q10- As a person with a reduced consumption of meat and meat products (flexitarian, vegetarian, or vegan) indicate your reasons why you decided to follow the plant-based diet. You can select several options that correspond to your case.

- a. I follow this diet for health reasons.
- b. I follow this diet because I want to cleanse my body.
- c. I follow this diet because I want to lose weight.
- d. I follow this diet because it is very fashionable now.

- e. My friends also follow this diet.
- f. I follow this diet for my family.
- g. I follow this diet because it is cheaper than the omnivorous one.
- h. I follow this diet because I don't like the taste of meat.
- i. I follow this diet because I want to try something new.
- j. I follow this diet because I consider myself spiritual and want to keep my body pure.
- k. I follow this diet because I feel better about myself.
- l. I follow this diet to defend animal rights.
- m. I follow this diet because I want to boycott the big meat industry.
- n. I follow this diet because I care about the environment.
- o. I follow this diet because I want to reduce hunger in the world.
- p. Other reason (state) _____

Q11- Do you say openly among your friends, peers, and other family members that you have decided to reduce meat consumption? Choose one answer only.

- a. Yes.
- b. Depends on the situation.
- c. No.

Q12- Is it easy for you to find and prepare foods for your diet with reduced meat intake? Choose one answer only.

- a. Yes.
- b. No.

Q13- Will you continue this diet with a reduced consumption of meat and meat products (flexitarian, vegetarian and vegan) in the near future (1-2 years)? Or will you return to eating the same levels of meat that you ate before the diet?

- a. Yes.
- b. No.
- c. I don't know (please indicate your reasons).

Q14- Please answer each of these questions in terms of how do you generally feel about the natural world. There are no right or wrong answers.

1= I disagree 2= 3= neutral 4= 5= I agree

I often feel a sense of oneness with the natural world around me. (1)

I think of the natural world as a community to which I belong. (2)

I recognize and appreciate the intelligence of other living organisms. (3)

I often feel disconnected from nature. (4)

When I think of my life, I imagine myself to be part of a larger cyclical process of living. (5)

I often feel a kinship with animals and plants. (6)

I feel as though I
belong to the
Earth. (7)

I have a deep
understanding of
how my actions
affect the natural
world. (8)

I often feel part of
the web of life. (9)

I feel that all
inhabitants of
Earth, human, and
nonhuman, share a
common 'life
force'. (10)

Like a tree can be
part of a forest, I
feel embedded
within the broader
natural world. (11)

When I think of
my place on Earth,
I consider myself
to be a top
member of a
hierarchy that
exists in nature.
(12)

I often feel like I
am only a small
part of the natural
world around me,
and that I am no

more important
than the grass on
the ground or the
birds in the trees.
(13)

My personal
welfare is
independent of the
welfare of the
natural world. (14)

Q15- Here are some questions about your social life.

	1 = Never (1)	2 = less than once a month (2)	3 = once or twice a month (3)	4 = once or twice a week (4)	5 = on most days (5)
How often do you talk to your neighbors? (1)					
How often do you meet your family (that does not live at your home? (2)					
How often do you meet your friends? (3)					

Q16- Gender

- Male
- Female
- Other

Q17- How old are you?

Years: _____

Q18- What is your field of study?

Economics (1)

Psychology (2)

Politics & Law (3)

Pedagogy (4)

Statistics/Math (5)

Marketing (6)

Business Administration (7)

Finance and accounting (8)

Human relationships and resources (9)

Environmental sciences (10)

Sociology (11)

Political sciences (12)

Other _____

Q19- Where do you live now?

- Rural area / village (1)
- Close to a city (2)
- City (3)

Q20- Are you a person rather left, right or neither of them? Express your opinion on the scale of 1 to 10 where 1 is extreme left and 10 extreme right.

Extremely left

Extremely right

01 02 03 04 05 06 07 08 09 10

Q21- Do you have a job while you study?

- Yes
- No

Q22- What is the total number of persons (including yourself) living in your household?

____ persons.

Q23- Approximately, what is the monthly income of your parents, per month, in euro?

- Less than 499€
- From 500 – 1000€

- From 1001 to 1499€
- From 1500 to 1999€
- From 2000 to 2499€
- From 2500 to 2999€
- From 3000 to 4499€
- More than 5000€

Q24- What is your marital status?

- Married
- In a long-term relationship
- Separated or divorced
- Widowed
- Single, without a fixed partner

Q25- Please respond to each of the following statements by selecting choices that are generally true to you:

	1= Totally untrue	2= Untrue	3= Somewhat true	4= Quite true	5= Extremely true
I feel alive and vital. (1)					

Sometimes I feel
so alive that I
want to burst. (2)

I have positive
energy and
vivacity. (3)

I'm looking
forward to each
new day. (4)

I am almost
always alert and
awake. (5)

I feel charged
with energy. (6)

Annex 2: The variance inflation factor test for multicollinearity

The variance inflation factor (VIF) test for model 8 of subjective well-being regression models (see Table 13), with the highest adjusted R-squared, indicates that the collinearity is present only when introduced the variable of age squared and each vegetarian profile connected to nature, being the latter the lineal combination of two independent variables. However, further tests indicate that the inclusion of age squared has not affected our results. The variables that constitute an interaction also present high VIF as expected.

Table 13

VIF test for hypotheses 1 and 2

Variable	VIF	1/VIF
Parents' income	1.13	0.882
Age	24.83	0.040
Age ²	24.19	0.041
Females	1.22	0.820
Single	1.05	0.950
Relations	1.06	0.941
Work status	1.24	0.806
<i>Area of residence</i>		
Near a city	1.75	0.571
Urban area	1.8	0.554
Political wing	2.5	0.400
<i>Area of study</i>		
Economics	5.89	0.170
Pedagogy	3.36	0.298
Environment	1.46	0.683
Sociology	2.44	0.411
Engineering	2.35	0.425
Medicine	2.25	0.445
Social work	2.74	0.365
Information technology	1.55	0.645
Connectedness to nature	1.61	0.621
Organic omnivore	44.55	0.022
Flexitarian	29.01	0.034
Lactopesco	23.31	0.043

Lactoovo	42.24	0.024
Vegan	37.07	0.027
Connect. organic omniv.	45.27	0.022
Connect. flexitarian	30.04	0.033
Connect. lactopesco	23.53	0.042
Connect. lactoovo	42.68	0.023
Connect. vegan	37.27	0.027
Mean VIF	15.15	

The variance inflation factor (VIF) test for the vegetarian adherence models (see Table 14) indicates that the collinearity is not present since the maximum values are lower than 1, which means that the predictor is not correlated with other variables.

Table 14

VIF test for hypothesis 3

Variable	VIF	1/VIF
Pro-environ. behaviour	1.45	0.689
Connectedness to nature	1.24	0.806
Food identity	1.32	0.760
Animal motivation	1.08	0.928
Health motivation	1.47	0.679
Social motivation	1.43	0.701
Taste motivation	1.15	0.873
Convenience	1.09	0.913
Age	1.13	0.888
Gender	1.08	0.928
Parents' income	1.07	0.932
Mean VIF	1.23	

Annex 3: Ordered probit and logit regression models for life satisfaction

In this annex we provide further results on regression estimations of the dimension of subjective well-being of life satisfaction. We repeated our estimations but now using ordered probit and logit regressions since regression models with qualitative responses are often referred to as probability models (Gujarati & Porter, 2009). Therefore, considering the ordinal nature of the categorical variable life satisfaction, it would be more appropriate to use an ordered probit or logit model.

In our results from estimations (4.2) we employed ordinary least squares regression method because its interpretation is simpler and the results obtained by both methods are very similar (Ferrer-i-Carbonell & Frijters, 2004). Here we confirm that the results obtained from probability models offer similar findings in regards to direction of the correlation with minor nuances as for the intensity of the effect, however, we arrive to similar conclusions as with ordinary least squares regression (see Tables 15 and 16).

Table 15

Ordered probit regression estimations for life satisfaction

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Variables	Satisfaction	Satisfaction	Satisfaction	Satisfaction	Satisfaction	Satisfaction	Satisfaction	Satisfaction
Parents'								
income	5.02e-05**	4.87e-05**	4.83e-05*	5.21e-05**	5.08e-05**	4.88e-05*	5.09e-05**	5.26e-05**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Age	-0.005	0.004	-0.010	-0.006	0.004	-0.002	-0.013	0.002
	(0.042)	(0.042)	(0.043)	(0.041)	(0.041)	(0.041)	(0.042)	(0.042)
Age ²	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Females	0.000	0.029	0.015	-0.021	0.008	0.012	-0.007	-0.012
	(0.069)	(0.069)	(0.070)	(0.070)	(0.069)	(0.070)	(0.070)	(0.071)
Single	-0.276***	-0.284***	-0.282***	-0.276***	-0.286***	-0.284***	-0.284***	-0.290***
	(0.067)	(0.067)	(0.067)	(0.066)	(0.066)	(0.066)	(0.067)	(0.067)
Relations	0.243***	0.250***	0.239***	0.231***	0.236***	0.238***	0.222***	0.222***
	(0.043)	(0.043)	(0.044)	(0.043)	(0.044)	(0.044)	(0.044)	(0.045)
Work status	-0.032	-0.033	-0.034	-0.048	-0.053	-0.048	-0.054	-0.059
	(0.080)	(0.079)	(0.080)	(0.080)	(0.080)	(0.080)	(0.080)	(0.080)
Near a city	-0.019	-0.005	-0.019	-0.010	0.009	0.009	-0.008	-0.016
	(0.111)	(0.111)	(0.111)	(0.111)	(0.111)	(0.111)	(0.111)	(0.111)

Urban area	-0.017 (0.091)	0.000 (0.091)	-0.013 (0.091)	-0.025 (0.091)	-0.007 (0.091)	-0.002 (0.091)	-0.020 (0.091)	-0.022 (0.091)
Political wing	0.062 (0.185)	0.063 (0.188)	0.105 (0.185)	0.076 (0.182)	0.081 (0.185)	0.083 (0.185)	0.135 (0.182)	0.131 (0.185)
Economics	-0.029 (0.158)	-0.033 (0.161)	-0.019 (0.158)	-0.002 (0.155)	-0.001 (0.158)	-0.005 (0.159)	0.017 (0.155)	0.004 (0.158)
Pedagogy	0.152 (0.168)	0.151 (0.172)	0.149 (0.170)	0.165 (0.166)	0.168 (0.170)	0.164 (0.170)	0.167 (0.167)	0.146 (0.170)
Environment	0.020 (0.307)	0.128 (0.304)	0.053 (0.299)	-0.029 (0.302)	0.091 (0.296)	0.048 (0.291)	0.031 (0.292)	-0.012 (0.276)
Sociology	-0.150 (0.182)	-0.122 (0.185)	-0.116 (0.185)	-0.152 (0.179)	-0.118 (0.183)	-0.126 (0.183)	-0.100 (0.182)	-0.144 (0.184)
Engineering	0.160 (0.215)	0.145 (0.218)	0.174 (0.216)	0.170 (0.214)	0.154 (0.217)	0.149 (0.218)	0.191 (0.214)	0.187 (0.217)
Medicine	0.336* (0.196)	0.333* (0.201)	0.347* (0.198)	0.349* (0.192)	0.349* (0.196)	0.339* (0.197)	0.368* (0.193)	0.352* (0.197)
Social work	0.034 (0.181)	0.049 (0.185)	0.046 (0.184)	0.024 (0.179)	0.041 (0.183)	0.031 (0.182)	0.044 (0.181)	0.035 (0.184)
Information technology	0.084 (0.260)	0.065 (0.263)	0.095 (0.263)	0.137 (0.263)	0.126 (0.268)	0.107 (0.264)	0.162 (0.267)	0.109 (0.266)
Connectedness to nature				0.132** (0.054)	0.166*** (0.056)	0.042 (0.101)	0.165*** (0.057)	0.094 (0.068)
Vegetarian scale		-0.0405*** (0.014)			-0.0492*** (0.014)	-0.167** (0.076)		
Connect. veget.						0.034 (0.022)		
Organic omnivore			-0.375 (0.263)				-0.470* (0.260)	-4.141*** (1.407)
Flexitarian			-0.188** (0.085)				-0.225*** (0.085)	-0.539 (0.478)
Lactopesco			-0.174 (0.216)				-0.225 (0.214)	-1.502* (0.819)
Lactoovo			-0.065 (0.135)				-0.142 (0.137)	-0.578 (0.685)
Vegan			0.159 (0.396)				0.075 (0.379)	-6.256*** (1.899)

Connect. organic omniv.								0.971*** (0.338)
Connect. flexitarian								0.096 (0.138)
Connect. lactopesco								0.367 (0.237)
Connect. lactoovo								0.127 (0.182)
Connect. vegan								1.639*** (0.460)
Constant cut1	-1.946*** (0.691)	-1.913*** (0.693)	-2.025*** (0.703)	-1.609** (0.684)	-1.482** (0.684)	-1.975*** (0.757)	-1.612** (0.692)	-1.759** (0.708)
Constant cut2	-1.456** (0.675)	-1.423** (0.677)	-1.530** (0.686)	-1.119* (0.668)	-0.993 (0.668)	-1.483** (0.739)	-1.117* (0.675)	-1.239* (0.687)
Constant cut3	-1.050 (0.681)	-1.016 (0.683)	-1.122 (0.690)	-0.714 (0.673)	-0.587 (0.672)	-1.074 (0.746)	-0.709 (0.678)	-0.817 (0.688)
Constant cut4	-0.693 (0.678)	-0.659 (0.680)	-0.764 (0.688)	-0.356 (0.671)	-0.228 (0.671)	-0.715 (0.746)	-0.350 (0.676)	-0.451 (0.687)
Constant cut5	-0.248 (0.677)	-0.212 (0.679)	-0.318 (0.687)	0.092 (0.671)	0.222 (0.670)	-0.265 (0.746)	0.099 (0.676)	0.003 (0.686)
Constant cut6	0.226 (0.678)	0.264 (0.679)	0.156 (0.687)	0.568 (0.670)	0.701 (0.670)	0.215 (0.746)	0.576 (0.675)	0.484 (0.685)
Constant cut7	0.978 (0.679)	1.018 (0.680)	0.911 (0.688)	1.321** (0.671)	1.458** (0.670)	0.972 (0.746)	1.333** (0.676)	1.245* (0.685)
Constant cut8	1.798*** (0.682)	1.840*** (0.683)	1.734** (0.691)	2.143*** (0.674)	2.283*** (0.673)	1.799** (0.747)	2.160*** (0.678)	2.076*** (0.688)
Constant cut9	2.446*** (0.685)	2.494*** (0.686)	2.386*** (0.694)	2.795*** (0.677)	2.943*** (0.675)	2.460*** (0.749)	2.816*** (0.681)	2.738*** (0.691)
Wald chi2	69.4	81.7	75.9	77.6	94.0	98.2	88.0	120.9
Pseudo R2	0.017	0.019	0.019	0.019	0.022	0.023	0.022	0.026

Probit regression models predicting levels of life satisfaction employing control variables (parents' income, age, female gender, single status, relations, work status, area of residence, political wing, and discipline of study), connectedness to nature, vegetarian scale, vegetarian identity in its gradual phases, and the interaction variable of connected vegetarians. All models are globally significant at 1%, according to the F test. N=1068, significant predictors are displayed in bold font. Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

Table 16
Ordered logit regression estimations for life satisfaction

Variables	Model 1 Satisfaction	Model 2 Satisfaction	Model 3 Satisfaction	Model 4 Satisfaction	Model 5 Satisfaction	Model 6 Satisfaction	Model 7 Satisfaction	Model 8 Satisfaction
Parents' income	9.48e-05**	9.17e-05**	9.16e-05**	9.79e-05**	9.51e-05**	9.02e-05**	9.66e-05**	0.000102**
	0	0	0	0	0	0	0	0
Age	0.001	0.013	-0.006	-0.007	0.006	-0.005	-0.019	-0.003
	-0.073	-0.073	-0.075	-0.073	-0.073	-0.073	-0.075	-0.075
Age ²	0	0	0.001	0	0	0	0.001	0
	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
Females	0.032	0.064	0.055	-0.001	0.03	0.035	0.02	0.007
	-0.121	-0.12	-0.122	-0.122	-0.121	-0.122	-0.123	-0.124
Single	-0.465***	-0.474***	-0.476***	-0.465***	-0.477***	-0.473***	-0.476***	-0.476***
	-0.117	-0.117	-0.117	-0.117	-0.118	-0.118	-0.118	-0.118
Relations	0.455***	0.461***	0.444***	0.434***	0.436***	0.438***	0.413***	0.412***
	-0.078	-0.078	-0.08	-0.079	-0.079	-0.079	-0.081	-0.082
Work status	-0.097	-0.092	-0.09	-0.12	-0.12	-0.114	-0.116	-0.122
	-0.142	-0.142	-0.142	-0.144	-0.144	-0.145	-0.144	-0.144
Near a city	-0.019	-0.003	-0.012	-0.01	0.014	0.017	-0.001	-0.026
	-0.199	-0.2	-0.199	-0.199	-0.201	-0.202	-0.2	-0.201
Urban area	0.021	0.046	0.033	0.006	0.035	0.038	0.021	0.006
	-0.163	-0.163	-0.163	-0.164	-0.165	-0.165	-0.164	-0.164
Political wing	0.193	0.182	0.251	0.211	0.205	0.204	0.294	0.268
	-0.336	-0.344	-0.34	-0.336	-0.345	-0.345	-0.34	-0.345
Economics	0.027	0.012	0.032	0.062	0.051	0.039	0.081	0.065
	-0.29	-0.297	-0.292	-0.288	-0.298	-0.299	-0.29	-0.296
Pedagogy	0.347	0.335	0.333	0.364	0.353	0.338	0.355	0.324
	-0.302	-0.31	-0.305	-0.301	-0.311	-0.314	-0.303	-0.31
Environment	0.134	0.251	0.25	0.046	0.17	0.107	0.192	0.049
	-0.575	-0.563	-0.589	-0.574	-0.561	-0.564	-0.584	-0.554
Sociology	-0.141	-0.104	-0.09	-0.147	-0.102	-0.125	-0.067	-0.148
	-0.33	-0.339	-0.338	-0.328	-0.339	-0.342	-0.335	-0.34
Engineering	0.545	0.515	0.549	0.558	0.524	0.512	0.571	0.558
	-0.37	-0.375	-0.373	-0.371	-0.378	-0.38	-0.375	-0.383

Medicine	0.763**	0.756**	0.789**	0.779**	0.775**	0.755**	0.816**	0.794**
	-0.35	-0.358	-0.354	-0.346	-0.355	-0.357	-0.349	-0.356
Social work	0.158	0.179	0.184	0.14	0.165	0.147	0.183	0.166
	-0.329	-0.336	-0.332	-0.327	-0.336	-0.337	-0.33	-0.336
Information technology	0.285	0.263	0.29	0.347	0.339	0.318	0.373	0.292
	-0.462	-0.466	-0.465	-0.46	-0.466	-0.461	-0.465	-0.467
Connectedness to nature				0.217**	0.268***	0.064	0.271***	0.159
				-0.097	-0.1	-0.186	-0.104	-0.126
Vegetarian scale		-0.0584**			-0.0722***	-0.262*		
		-0.025			-0.025	-0.141		
Connect. veget.						0.055		
						-0.04		
Organic omnivore			-0.407				-0.591	-6.559***
			-0.43				-0.42	-2.272
Flexitarian			-0.351**				-0.414***	-0.842
			-0.146				-0.148	-0.881
Lactopesco			-0.34				-0.406	-2.362
			-0.463				-0.459	-1.509
Lactoovo			-0.11				-0.239	-0.815
			-0.234				-0.24	-1.204
Vegan			0.478				0.308	-11.21**
			-0.736				-0.708	-4.769
Connect. organic omniv.								1.549***
								-0.539
Connect. flexitarian								0.135
								-0.253
Connect. lactopesco								0.572
								-0.437
Connect. lactoovo								0.174
								-0.321
Connect. vegan								2.917***
								-1.108
Constant cut1	-3.899***	-3.900***	-4.027***	-3.429***	-3.317**	-4.146***	-3.477***	-3.783***
	-1.309	-1.316	-1.326	-1.301	-1.308	-1.46	-1.311	-1.352
Constant cut2	-2.501**	-2.501**	-2.629**	-2.031*	-1.919	-2.747**	-2.079*	-2.373*
	-1.233	-1.24	-1.253	-1.225	-1.232	-1.392	-1.238	-1.274
Constant cut3	-1.527	-1.527	-1.655	-1.057	-0.944	-1.772	-1.105	-1.391
	-1.235	-1.243	-1.257	-1.227	-1.234	-1.402	-1.241	-1.273

Constant cut4	-0.777	-0.777	-0.904	-0.305	-0.192	-1.021	-0.352	-0.632
	-1.225	-1.233	-1.249	-1.219	-1.227	-1.398	-1.234	-1.267
Constant cut5	0.068	0.069	-0.06	0.542	0.658	-0.171	0.497	0.225
	-1.222	-1.229	-1.246	-1.216	-1.223	-1.396	-1.231	-1.262
Constant cut6	0.889	0.894	0.764	1.367	1.488	0.659	1.325	1.059
	-1.222	-1.229	-1.246	-1.215	-1.222	-1.395	-1.23	-1.261
Constant cut7	2.120*	2.128*	2.001	2.599**	2.724**	1.897	2.564**	2.306*
	-1.226	-1.233	-1.25	-1.219	-1.225	-1.396	-1.233	-1.263
Constant cut8	3.510***	3.519***	3.397***	3.993***	4.120***	3.296**	3.966***	3.717***
	-1.233	-1.24	-1.258	-1.226	-1.232	-1.401	-1.24	-1.269
Constant cut9	4.775***	4.786***	4.667***	5.263***	5.393***	4.569***	5.241***	5.006***
	-1.242	-1.248	-1.266	-1.234	-1.239	-1.405	-1.248	-1.278
Wald chi2	75	85.6	83.8	81.3	95	98.4	94.6	128.6
Pseudo R2	0.019	0.021	0.021	0.021	0.023	0.023	0.023	0.027

Ordered logit regression models predicting levels of life satisfaction employing control variables (parents' income, age, female gender, single status, relations, work status, area of residence, political wing, and discipline of study), connectedness to nature, vegetarian scale, vegetarian identity in its gradual phases, and the interaction variable of connected vegetarians. All models are globally significant at 1%, according to the F test. N=1068, significant predictors are displayed in bold font. Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1.