

Genetic, Hormonal, And Environmental Determinants Of Sexual Orientation

Manuel Becerro Cereceda

Research Scholar, Faculty of Health Sciences, Kennedy University, France.

Dr. Ignacio Bonasa Alzuria

Thesis, Supervisor, Spain.

Email: mbecerrocereceda@gmail.com

Article Received: 07-07-2026

Article Revised: 21-08-2026

Article Accepted: 10-09-2025

Article Published: 18-09-2025

Citation: “ Genetic, Hormonal, And Environmental Determinants Of Sexual Orientation”, *ijrgh*, vol. 2, no. 3, pp. 1–19, Sept.. 2026.

Copyright: © 2026 by the authors. Submitted for possible open access publication under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

Abstract

Sexual orientation is a complex aspect of human behavior that has received increasing scientific attention because of the diverse range of factors associated with its development. Current scientific evidence suggests that it cannot be attributed to a single determinant, but rather emerges from interactions among biological, hormonal, genetic, developmental, and environmental factors, with their relative influence varying between individuals.

The aim of this thesis is to critically review and integrate existing scientific knowledge concerning the determinants of human sexual orientation from a multidisciplinary perspective. For this purpose, major contributions from genetics, endocrinology, embryology, neuroscience, psychology, anthropology, and sociology are examined to establish a comprehensive framework for understanding sexual orientation as a complex biological and psychosocial phenomenon.

This research is based on the need to move beyond reductionist approaches that seek to explain sexual orientation from an individual perspective. Accordingly, it examines processes associated with embryonic development, sexual differentiation, prenatal hormonal influences, genetic factors identified in scientific research, functional organization of the nervous system, psychological processes related to identity and affectivity, and the influence of family, social, and cultural environments throughout human development.

Sexual orientation begins to develop during the early stages of life through complex processes that may involve genetic, hormonal, neurobiological, and environmental influences. During prenatal development, childhood, and adolescence, significant processes of differentiation, maturation, and interaction with the environment occur and may contribute to the development of human sexuality. Therefore, understanding sexual orientation requires consideration of different developmental stages, ranging from gamete formation and embryonic development to sexual maturation, while avoiding the attribution of its origin to a single factor or specific developmental period.

The methodology consists of a documentary and comparative review of scientific literature from the biomedical and social sciences, incorporating studies obtained from national and international databases. The collected information is systematically organized to identify the principal explanatory models, their limitations, and the level of scientific evidence supporting each model.

The findings indicate that sexual orientation is a multifactorial phenomenon that requires the integration of knowledge from multiple scientific disciplines. No single explanatory model adequately accounts for the diversity observed in human sexual orientation. Instead, the available evidence supports a complex interaction between biological and environmental factors occurring throughout human development.

Finally, this thesis proposes an integrative and evidence-based approach to the study of sexual orientation, contributing to a broader understanding of its determinants and providing a theoretical framework that may support and guide future research in this field.

Keywords: *Sexual orientation, genetics, prenatal hormones, brain, neurobiology, endocrinology, homosexuality, heterosexuality.*

Introduction

Human sexual orientation refers to a relatively stable pattern of emotional, romantic, affective, and/or sexual attraction towards other people. It is a fundamental aspect of human sexuality and is distinct from biological sex, gender identity, gender expression, and sexual behavior. It includes orientations such as heterosexuality, homosexuality, bisexuality, pansexuality, and asexuality, while different forms of attraction may occur independently. Models such as the Kinsey Scale, Klein Sexual Orientation Grid, and Sell Assessment help examine its different dimensions. Sexual orientation is recognized as part of human diversity, although discrimination and stigma can negatively affect sexual minorities. Its development is considered complex and may involve interacting genetic, hormonal, neurobiological, psychological, social, cultural, and environmental factors. The rationale for this study is to develop a multidisciplinary understanding of sexual orientation and its relevance to biomedical, psychological, and social sciences, since no single explanatory model fully accounts for the phenomenon.

The main objective of this research is to critically review and integrate scientific evidence concerning human sexual orientation, examine its biological, psychological, social, cultural, and environmental influences, compare major explanatory theories, and identify controversies and research gaps. The study adopts a narrative and integrative literature-review method, drawing on scientific studies from PubMed, Scopus, Web of Science, and SciELO and organizing the literature thematically across relevant disciplines. The thesis is structured into five parts: an introduction to the topic, rationale, objectives, and methodology; an examination of biological and evolutionary foundations, including genetic and epigenetic aspects; a review of anatomical, embryological, and physiological foundations; an analysis of biological, psychological, anthropological, social, and cultural determinants and explanatory theories; and a final discussion of findings, conclusions, limitations, and future research directions.

Biological And Evolutionary Foundations Of Sexual Orientation

The biological basis of human sexual development involves complex interactions between genetic, epigenetic, hormonal, and environmental factors. Sexual orientation is not determined by a single gene; rather, twin and genome-wide studies suggest that multiple genetic variants contribute partially to its variation. Prenatal hormonal conditions may also influence brain development and later sexual preferences, although associations involving particular chromosomes do not establish that any chromosome independently determines sexual orientation. Epigenetics refers to changes in gene activity without altering the DNA sequence and includes DNA methylation, histone modification, non-coding RNA, and chromatin remodeling. These regulatory mechanisms control gene expression according to developmental and cellular requirements and play important roles in embryonic development, cellular differentiation, and the maintenance of cellular identity. DNA methylation can reduce gene expression, while histone acetylation generally supports a more open chromatin structure and facilitates transcription; both processes work together to regulate gene activity, and their disruption has been associated with certain diseases.

Pre-embryonic and embryonic development are important stages in which biological signals and environmental conditions may influence later health. The Developmental Origins of Health and Disease concept highlights the lasting effects that prenatal and early-life conditions can have, particularly during the first 1,000 days. Human development results from continuous interactions between genetic and environmental influences, including prenatal conditions, maternal stress, early-life experiences, diet, lifestyle, and environmental exposures. Although genes associated with the dopaminergic system have been studied in relation to behavioral characteristics, complex human traits cannot be explained by individual genes alone. Genetic variation, epigenetic regulation, and environmental factors interact throughout development and life, while the extent and significance of transgenerational epigenetic inheritance in humans remain under investigation.

Ecology of Sexual Differentiation

Human sexuality develops through the interaction of biological, psychological, social, cultural, and environmental systems. Although some biological responses are innate, their expression and meaning are influenced by individual development, social relationships, and cultural context. Sexual differentiation has evolved through long-term biological processes involving reproduction, inheritance, mutation, and natural selection. These processes maintain the continuity of life while generating genetic variation and contributing to the increasing complexity and diversification of living organisms. Early chemical evolution may have produced primitive structures known as protobionts, containing increasingly complex molecules and potentially supporting basic replication and information transfer. Replication errors generated variation, while natural selection favored more stable and functional systems, contributing to the emergence of primitive cellular organization and more coordinated genetic and protein-synthesis processes.

Gene duplication and genome organization contributed to the development of increasingly stable cellular systems, including the distinction between prokaryotic and eukaryotic cells. Eukaryotic cells possess a membrane-bound nucleus, specialized organelles, and chromosomes distributed during mitosis. Chromosomal organization also enables

genetic recombination and the reliable transmission of genetic material. During meiosis, chromosome numbers are reduced to produce haploid gametes, while recombination generates new genetic combinations. Genetic diversity arises through mutation, recombination, genetic drift, and gene flow, with sexual reproduction combining variants from different parental lineages. Human populations have experienced genetic exchange throughout history, and population genetics does not support the idea of biologically “pure” populations. Reproduction between close biological relatives increases the likelihood of inheriting harmful recessive variants, although prohibitions against incest also involve cultural, social, and ethical considerations. Overall, sexual differentiation contributes to reproduction and biological variation, while human sexuality must be understood through the combined influence of biological and wider developmental and social factors.

The Origin of Life

Reproduction is essential for the continuity and evolution of life, while artificial-life research investigates whether life-like properties can emerge from chemical systems different from those of modern organisms. Juan Pérez-Mercader and his research team have explored synthetic chemical systems that can self-assemble into microscopic structures with certain life-like properties. Artificial protocells are experimental models used to investigate how non-living chemical components might develop organized structures resembling primitive cells. Although these systems are not complete living organisms and do not recreate the actual origin of life, they help researchers examine possible transitions from non-living chemistry to biological organization. Such research may also contribute to astrobiology by exploring whether life elsewhere could develop through chemical mechanisms different from those found on Earth.

Sexuality as an Accelerator of Evolution

Sexual reproduction contributes to evolution by combining genetic information from different individuals and generating variation through diploidy and genetic recombination. Evolution has produced diverse reproductive mechanisms adapted to different environments, including asexual reproduction, sexual reproduction, and sexual dimorphism. In humans, sexuality extends beyond reproduction because psychological, social, cultural, ethical, and personal factors influence attraction, relationships, identity, and behavior. Biological diversity also appears in physical structures, coloration, and behaviors associated with communication, recognition, camouflage, and sexual selection. The human penis achieves rigidity mainly through blood flow into the corpora cavernosa, unlike many mammals that possess a baculum. Other reproductive strategies found in nature include parthenogenesis, with forms such as thelytokous, arrhenotokous, and cyclical parthenogenesis, as well as paedogenesis. External fertilization, common in many aquatic organisms, involves the release of gametes into the environment, where chemical signals may guide sperm toward eggs and mechanisms generally prevent polyspermy.

Neanderthals (*Homo neanderthalensis*)

Neanderthals lived across Eurasia from approximately 400,000 to 40,000 years ago and demonstrated complex social behavior, tool use, and the ability to care for group members. Genetic evidence indicates that Neanderthals interbred

with *Homo sapiens*, leaving approximately 1–2% Neanderthal DNA in many present-day populations with predominantly non-African ancestry. Some inherited variants may have contributed to adaptations involving immunity, skin, metabolism, and environmental conditions. Neanderthals occupied Europe, the Middle East, Central Asia, and Siberia, and certain regions of the modern human genome contain reduced Neanderthal ancestry, potentially because of natural selection or genetic incompatibilities. Research using brain organoids and archaic genetic variants has investigated differences in neuronal development, but such findings do not establish differences in intelligence or sexual preferences.

Archaeological evidence, including pigments, modified objects, shells, feathers, and cave markings, has been associated with Neanderthal activity and may indicate symbolic behavior, although some interpretations remain debated. Neanderthals had brain sizes comparable to, and in some estimates larger than, those of modern humans, but brain size and genetic differences alone cannot establish intelligence. There is no direct evidence that allows the sexual orientation of individual Neanderthals to be determined. Genetic and anatomical evidence indicates that Neanderthals generally lacked a baculum, like modern humans, while evidence of interbreeding confirms reproductive contact between the groups. Their disappearance around 40,000 years ago remains unexplained by any single confirmed cause. Proposed explanations include climate change, competition, demographic limitations, disease, genetic factors, interbreeding, and gradual assimilation into expanding *Homo sapiens* populations. Their disappearance is therefore understood as potentially involving multiple interacting biological, environmental, demographic, and cultural factors.

The Evolution of Sexual Orientation

Neanderthals and *Homo sapiens* interbred in Eurasia, contributing Neanderthal DNA to many present-day populations with predominantly non-African ancestry. Differences in maternal, paternal, autosomal, and sex-chromosome ancestry may suggest sex-related patterns in interbreeding, although their exact nature remains uncertain. Ancient-DNA evidence confirms reproduction between the populations but cannot establish individuals' sexual orientation or personal preferences. The absence of Neanderthal mitochondrial DNA in present-day humans does not prove that Neanderthal women did not reproduce with *Homo sapiens* men, since maternal lineages can disappear through genetic drift, selection, or demographic changes.

The reduced Neanderthal ancestry observed on the human X chromosome may reflect natural selection, fertility differences, demographic factors, or sex-biased interbreeding, but it cannot establish particular relationship patterns. Neanderthal ancestry contributed some genetic variants associated with skin, hair, immunity, and metabolism, although modern human characteristics have multiple origins. The reasons for interbreeding remain uncertain and may have involved population movement, social contact, group integration, individual choice, and cultural practices. Darwin's concept of sexual selection highlights competition and mate choice in evolution; therefore, Neanderthal–*Homo sapiens* interbreeding is best understood through human evolution, population genetics, migration, reproduction, and sexual selection, rather than as direct evidence of a particular sexual orientation.

Anatomical, Embryological And Physiological Bases Of Human Sexuality

Male Reproductive System

The male reproductive system includes external genitalia, internal organs, hormones, and the brain, which work together to support reproduction and sexual function. The testes, located in the scrotum, produce sperm through spermatogenesis and testosterone through steroidogenesis, regulated by the hypothalamic-pituitary-gonadal axis. Each testis contains seminiferous tubules, where sperm develop, and supporting tissue with Leydig cells, which produce testosterone, and Sertoli cells, which support sperm development and form the blood-testis barrier. Sperm pass through the rete testis and efferent ductules into the epididymis, where they mature, develop motility and fertilizing capacity, and are stored. The vas deferens transports sperm toward the ejaculatory ducts, which pass through the prostate and open into the prostatic urethra.

The testes receive blood mainly from the testicular arteries, with venous drainage through the testicular veins and lymphatic drainage to the pre-aortic and lateral aortic lymph nodes. The seminal vesicles produce fructose-rich fluid that provides energy for sperm and contributes substantially to semen volume, while the prostate gland produces fluid containing substances such as zinc, citric acid, enzymes, and antigens that support sperm function. The bulbourethral glands release lubricating alkaline mucus during sexual arousal, helping protect and prepare the urethra. The penis consists mainly of the glans, corpus spongiosum, and two corpora cavernosa. Blood filling the corpora cavernosa produces erection, while the corpus spongiosum surrounds the urethra. Sensory and autonomic nerves coordinate sexual responses, with parasympathetic activity mainly associated with erection and sympathetic activity contributing to ejaculation.

Female Reproductive System

The female reproductive system includes the external genitalia and internal organs involved in sexual function, menstruation, fertilization, pregnancy, and childbirth. The vulva comprises the mons pubis, labia majora and minora, clitoris, urethral opening, vaginal opening, and vestibule, providing protection and sensory functions. The Bartholin glands produce lubricating mucus during sexual arousal, while the Skene glands near the urethral opening contribute to lubrication and may have an antimicrobial function. The clitoris is a sensitive erectile organ involved in sexual pleasure, containing external and internal components, including the glans, corpora cavernosa, crura, and vestibular bulbs. The vagina is an elastic muscular canal connecting the uterus and cervix with the exterior and functions in sexual intercourse, menstrual flow, and childbirth. Its mucosa, muscle, connective tissue, collagen, elastin, and rugae allow expansion.

The uterus consists mainly of the body and cervix and has three layers: the endometrium, which supports implantation and undergoes cyclic changes; the myometrium, which produces contractions; and the perimetrium, the outer layer. The ovaries contain follicles that develop and release mature oocytes during ovulation and consist of an outer cortex and inner medulla, supplied mainly by the ovarian artery with additional supply from the uterine artery. The Fallopian tubes transport oocytes and early embryos and are the usual site of fertilization. The cervix, the lower fibromuscular part of the uterus, connects with the vagina and allows passage of sperm and menstrual flow. During pregnancy it

helps keep the uterus closed and dilates during childbirth, while cervical mucus changes throughout the menstrual cycle to facilitate or restrict sperm passage.

Embryonic Development of the Sexual Organs

The gonadal ridge begins developing around the fifth week of gestation from intermediate mesoderm near the mesonephros. It is initially a bipotential structure capable of developing into either a testis or an ovary. Primordial germ cells migrate to the ridge, while the coelomic epithelium and underlying mesenchyme contribute to gonadal tissue. The early indifferent gonad has no clearly male or female characteristics and differentiates mainly according to genetic factors. In typical testicular development, the SRY gene on the Y chromosome initiates a pathway leading to testis formation and testicular cords. In typical ovarian development, in the absence of SRY, primitive sex cords regress and cortical development leads to primordial follicles.

Early embryos develop two pairs of genital ducts: the mesonephric (Wolffian) ducts and paramesonephric (Müllerian) ducts, whose development and regression are regulated by genetic and hormonal factors. In typical male development, testosterone supports differentiation of the Wolffian ducts into the epididymis, vas deferens, seminal vesicles, and ejaculatory ducts. In typical female development, these ducts largely regress, although vestigial remnants may remain. The Müllerian ducts develop into the Fallopian tubes, uterus, cervix, and upper part of the vagina in typical female development, largely in the absence of anti-Müllerian hormone (AMH). In typical male development, AMH produced by the testes causes Müllerian duct regression, although small remnants may persist. Female reproductive tract development does not depend on ovarian hormones in the same way male differentiation depends on fetal testicular hormones; maternal and placental estrogens contribute to later development and maturation.

Development of the External Genitalia, Sex Determination and Disorders of Sex Development

The reproductive system develops from the gonadal ridge, which forms around the fifth week of gestation from mesodermal epithelium, mesenchyme, and primordial germ cells. Initially, the gonads are indifferent, with an external cortex and internal medulla. Chromosomal sex is established at fertilization, while gonadal differentiation occurs later. In typical XY development, the SRY gene activates pathways involving SOX9, promoting testicular formation; Sertoli cells produce anti-Müllerian hormone (AMH), and Leydig cells produce testosterone. In typical XX development, genes such as WNT4 and β -catenin contribute to ovarian development. Primordial germ cells migrate from the yolk sac to the gonadal ridges and later develop into sperm or oocytes through meiosis. At puberty, the hypothalamic-pituitary-gonadal axis activates LH and FSH production, supporting reproductive maturation and hormone secretion. The external genitalia initially develop from the genital tubercle, urethral folds, and labioscrotal swellings. In typical male development, DHT, converted from testosterone, promotes elongation of the genital tubercle into the penis, fusion of the urethral folds to form the spongy urethra, and fusion of the labioscrotal swellings to form the scrotum. In typical female development, the genital tubercle forms the clitoris, the unfused urethral folds form the labia minora, and the labioscrotal swellings form the labia majora. The inguinal canals and gubernaculum contribute to gonadal movement. The testes descend from the posterior abdominal wall toward the scrotum, generally beginning around the

26th week and reaching the scrotum by approximately the 32nd week. The ovaries move into the pelvis, while the gubernaculum forms the ovarian and round ligaments. The processus vaginalis normally becomes largely obliterated, and its persistence in females is known as the canal of Nuck.

Neuroanatomy and Physiology of the Sexual Response and Functional Anatomy of Pleasure

The brain plays a central role in sexual desire by processing sensory information, regulating emotions, and coordinating physiological responses through neural, hormonal, and neurotransmitter systems. The hypothalamus regulates endocrine functions and sex hormones, the amygdala processes emotional and sensory information, the ventral tegmental area participates in reward and dopamine release, and the prefrontal cortex contributes to decision-making and behavioral regulation. The autonomic and somatic nervous systems coordinate sexual arousal and orgasm. The parasympathetic system promotes genital blood flow, erection, and lubrication, while the sympathetic system contributes to orgasm, increased heart rate, and rhythmic pelvic contractions. The pudendal, pelvic, and hypogastric nerves transmit sensory information and help coordinate pelvic responses. Testosterone contributes to libido, while oxytocin and endorphins are associated with bonding, pleasure, relaxation, and well-being.

Sexual pleasure involves anatomical, neurological, hormonal, and psychological processes. Male sexual pleasure is strongly associated with the penis and ejaculatory system, while female sexual pleasure is strongly associated with the clitoris, including its internal erectile structures. Orgasm and ejaculation are distinct processes: orgasm is a neurological and subjective response, whereas ejaculation is a physical reflex involving the reproductive tract and pelvic muscles. Ejaculation occurs in two phases, emission and expulsion, and may occur without the expected subjective sensation of orgasm; conversely, orgasm may occur without external semen release, as in anejaculation or retrograde ejaculation. In females, orgasm is not directly linked to fluid expulsion, and the presence and duration of a refractory period vary. The pelvic floor, including the pubococcygeus, ischiocavernosus, and bulbocavernosus muscles, contributes to rhythmic contractions and sexual sensation. Pelvic floor weakness or excessive tension may affect sexual response and contribute to discomfort or pain.

Biological Determinants Of Sexual Orientation

Genetic Determinants

Sexual orientation is a complex characteristic influenced by genetic, epigenetic, hormonal, developmental, and environmental factors. Research suggests that genetics contributes to individual differences, but no single gene determines sexual orientation. Family and twin studies indicate partial genetic influence, while adoption studies do not support the idea that children simply adopt their parents' orientation. A major 2019 genome-wide association study involving nearly 500,000 participants identified five genetic loci associated with same-sex sexual behavior, each with a very small effect. These findings support a polygenic model and show that genetic information cannot reliably predict an individual's orientation.

Epigenetics examines changes in gene activity without altering the DNA sequence, including mechanisms such as DNA methylation that may interact with developmental and hormonal signals. Researchers have proposed that

prenatal conditions and hormone sensitivity may contribute to sexual development, but these explanations remain under investigation. Genetic research also faces limitations because studies may measure behavior rather than attraction or identity, have limited representation across ancestry groups, and cannot easily separate genetic effects from developmental and environmental influences.

Prenatal Hormonal Determinants

Prenatal hormones contribute to the development of reproductive organs and may influence brain development. Genes guide gonadal formation, while hormones such as testosterone and anti-Müllerian hormone regulate reproductive differentiation. Prenatal hormonal exposure, epigenetics, and neurodevelopment have been studied as possible contributors to sexual orientation and gender identity, but no single factor determines either. Brain studies have identified some group-level differences, yet no individual brain characteristic can establish a person's orientation or identity. The biopsychosocial perspective understands human sexuality through interactions among biological, psychological, developmental, and social factors. Sexual orientation is not a disease, and scientific evidence does not support attempts to change it through conversion therapy.

Neurobiological Determinants and Brain Organization of Sexual Orientation

Prenatal development involves interactions among genes, hormones, brain development, and environmental factors. Maternal stress, tobacco, nicotine, certain drugs, and hormone-like compounds have been studied for possible effects on fetal development, while the fraternal birth-order effect has been investigated as a possible immunological influence. The 2D:4D digit ratio, comparing index- and ring-finger lengths, has been proposed as an indirect marker of prenatal androgen exposure, but findings are inconsistent and it cannot predict sexual orientation. Endocrine disruptors, including some bisphenols, phthalates, parabens, and pesticides, may interfere with hormonal signaling; their effects depend on the substance, exposure level, and timing. Pregnancy hormones such as progesterone, estrogens, hCG, prolactin, relaxin, oxytocin, and human placental lactogen support maternal and fetal processes and influence bodily changes during pregnancy.

The brain coordinates sexual motivation, emotional responses, and physiological activity through interconnected regions, including the hypothalamus, limbic system, amygdala, and midbrain. Dopamine and oxytocin contribute to reward, motivation, and emotional connection. Prenatal organizational effects may influence developing neural circuits, while later activational effects occur as hormone levels change during puberty and adulthood. Genetic, epigenetic, hormonal, and environmental variability contributes to differences in development, but sexual orientation and gender identity are not determined in a simple or predictable way. Although some average sex-related brain differences have been reported, substantial overlap exists among individuals.

Neuroimaging methods such as fMRI and PET allow researchers to investigate brain activity, structure, connectivity, and chemical processes associated with sexual arousal, motivation, and reward. Studies have examined the amygdala, hypothalamus, insula, ventral striatum, basal ganglia, and other regions, but findings vary and represent group-level associations rather than individual diagnostic markers. Brain connectivity research examines structural pathways,

coordinated activity, and directional influences between regions. The hypothalamus is particularly relevant because it links the nervous and endocrine systems and regulates hormonal activity, reproductive functions, and other essential bodily processes.

Neurological Bases of Sexual Orientation

The neurobiological study of sexual orientation examines interactions among genetic factors, prenatal hormones, and brain development. Testosterone and its effects on developing tissues and neural circuits have been studied as possible contributors to variation in sexual development. Researchers have investigated brain structures such as the sexually dimorphic nucleus and the third interstitial nucleus of the anterior hypothalamus (INAH-3), where some studies have reported average differences between groups. These findings do not establish a direct cause of sexual orientation. The hypothalamus, midbrain, and dopaminergic connections with the nucleus accumbens are also involved in hormonal regulation, reward, motivation, and responses to sexually relevant stimuli.

The thalamus acts as a relay center for sensory information and contributes to attention, memory, and alertness. Through connections with the hypothalamus, midbrain, and cerebral cortex, it helps integrate sensory input with emotional and cognitive processes involved in attraction and desire. The precuneus, located on the medial surface of the parietal lobe, contributes to body awareness, spatial imagination, autobiographical memory, and internal experience. Together with other cortical regions, it participates in integrating sensory, cognitive, and emotional information relevant to sexual experience. Neuroimaging findings show variation and overlap among individuals and cannot determine a person's sexual orientation.

Integration of Explanatory Models

Sexual orientation is a multifactorial characteristic shaped by interactions among genetic, biological, developmental, and environmental influences. Multiple genetic variants may contribute to predispositions, while prenatal hormonal exposure, the intrauterine environment, and epigenetic processes may also play roles in sexual development. Family relationships, education, social interactions, and support networks can influence how individuals experience and express their identity. Sexual orientation is not considered a conscious choice, and no single factor provides a complete explanation of its development.

The biopsychosocial model explains sexual orientation through the interaction of biological, psychological, and social dimensions. Biological factors include genetics, prenatal hormones, and neuroendocrine development; psychological factors include emotional and cognitive development, desire, and self-understanding; and social factors include family, culture, education, social norms, and acceptance. The Attraction-Identity-Behavior (AIB) model distinguishes attraction, identity, and behavior as related but separate components. Current integrative models emphasize that sexual orientation is complex and variable, and that biological sex, gender identity, and sexual orientation are distinct concepts.

Psychological, Social And Cultural Determinants

Biological Sex and Sexual Identity

Biological sex is associated with physical characteristics such as chromosomes, hormones, reproductive organs, and genitalia. Variations in these characteristics, including intersex traits, demonstrate that biological sex development can be diverse. Gender, however, involves social, cultural, and psychological dimensions, while gender identity refers to an individual's internal understanding of their gender. Gender expression describes how a person presents their gender through appearance, behavior, and social roles.

Biological sex can influence certain health risks, including osteoporosis, autoimmune conditions, cardiovascular disease, and some sex-linked disorders. Differences in hormonal and reproductive systems may also affect health across the lifespan. Sexual identity and gender identity are distinct from biological characteristics, and an individual's identity may or may not align with the sex assigned at birth.

Origin of Sexual Preference

Sexual attraction involves biological, emotional, cognitive, and psychological dimensions. Classical psychoanalytic theories examined the possible influence of early experiences, unconscious fantasies, and internal representations on adult relationships and attraction. These theories also emphasized emotional connection, communication, and the role of family and social relationships in psychological development.

However, classical explanations should be understood as historical perspectives rather than established universal causes of sexual orientation. Parenting styles, family structure, or the absence of a particular parent have not been shown to determine whether someone develops a heterosexual or homosexual orientation. Psychodynamic approaches may help explore an individual's experiences and relationships, but sexual orientation is not explained by a single psychological cause.

Environmental Determinants

An individual's understanding of identity develops through interactions between personal experiences, bodily characteristics, social feedback, and cultural expectations. Family, peers, and wider society can influence how people express their identity and how they understand themselves. Social norms may also create unequal levels of acceptance for different forms of gender expression and sexual identity.

Social experiences can affect self-esteem, confidence, and the willingness to disclose or express identity. However, sexual orientation and gender identity are distinct, and social conflict or expectations should not be treated as proof of a particular orientation. Differences in how people experience attraction, identity, and social recognition demonstrate the importance of considering individual and cultural contexts.

Nature in Sexual Orientation

Biological factors may contribute to sexual orientation, but they do not establish a single explanation for human attraction or behavior. Cultural and historical contexts influence how sexuality is understood, expressed, and socially accepted. The term natural can have different meanings and should not be treated as a moral standard for judging individuals or relationships. Homosexuality has faced stigma and persecution in various societies, reflecting changing cultural and historical attitudes.

Earlier psychoanalytic explanations of homosexuality remain historical theories rather than universally established mechanisms. Same-sex behavior in particular situations, such as environments with limited opportunities for other relationships, does not necessarily indicate a person's enduring sexual orientation. Forms of marriage and partnership, including polygyny and polyandry, also vary across cultures, showing that social practices cannot be reduced to one presumed natural ideal.

Genesis of Homosexual Traits

Homosexuality is not a disease or a psychological disorder, and current understanding does not support explaining sexual orientation through a single genetic, biological, or environmental factor. Sexual orientation is generally understood as involving multiple influences, and it is not considered a simple conscious choice. Parenting style or family structure alone does not determine whether a person develops a homosexual orientation.

Some early psychoanalytic and developmental theories proposed that caregiver relationships, attachment, parental identification, or childhood experiences influenced later sexuality. Concepts such as parental deprivation or identification with a particular parent should be understood as theoretical interpretations, not established explanations of sexual orientation. Supportive family relationships can contribute to general emotional well-being, but they do not determine a person's sexual orientation.

Factors of Social Determination

Social environments, including family, peers, and cultural expectations, can influence how individuals understand and express their sexual identity. Social acceptance or rejection may affect confidence, self-esteem, and the willingness to communicate personal experiences. However, these social influences should not be treated as a single proven cause of sexual orientation, and individual differences in personality and relationships are part of normal human variation. Sexual desire and relationships can involve emotional, communicative, relational, and personal meanings beyond reproduction. Psychoanalytic perspectives have explored how desires and interests may be shaped or interpreted through psychological experience, but such interpretations do not establish that a particular orientation results from trauma or social learning. Understanding sexuality therefore requires distinguishing attraction, behavior, identity, and the social context in which people experience them.

The Socio-Personal Integration of Sexual Orientation and Non-Conformity with Biological Sex

Sexual identity develops through biological, psychological and social influences. From childhood, individuals receive expectations and social messages from parents, peers and society that may shape their self-understanding. Affection, recognition and acceptance can contribute to emotional security, while rejection, humiliation and criticism may cause distress. Social expectations about masculinity and femininity can also influence how children are treated, particularly when their behaviour differs from traditional gender roles. However, parental identification, peer relationships and early emotional experiences are not established causes of a particular sexual orientation.

Self-understanding also develops through physical characteristics, personal experiences and cultural expectations. Individuals may experience conflict between their bodies, gender-related characteristics and personal ideals, which can influence self-esteem and confidence. Acceptance and positive recognition may strengthen a sense of competence,

while exclusion may contribute to insecurity. Dissatisfaction with sexual anatomy or gender-related characteristics may relate to body image or gender identity and should be distinguished from sexual orientation, which concerns patterns of attraction.

Paradoxes of Human Sexuality

Human sexuality involves biological, psychological and social dimensions. Freud placed sexuality at the centre of personality development, although many of his theories have since been revised. Gender incongruence involves a difference between a person's gender identity and expectations associated with their assigned sex, and distress may be influenced by personal conflict or social discrimination. Sexual relationships may also experience emotional, psychological and interpersonal difficulties, while sexual dysfunctions can involve desire, arousal, orgasm or pain and penetration. Examples include reduced desire, arousal difficulties, erectile dysfunction, premature or delayed ejaculation, anorgasmia and sexual pain.

Sexual dysfunctions may have biological, psychological and relational contributors, including medical conditions, hormonal changes, medication, anxiety, stress, depression, trauma and relationship conflict. Paraphilias are atypical patterns of sexual interest or arousal, but they are not automatically disorders; a paraphilic disorder involves significant distress or impairment, or behaviour involving non-consenting people or risk of harm. Examples include voyeurism, exhibitionism, frotteurism, sexual masochism, sexual sadism, pedophilic interests, fetishistic interests and transvestic fetishism. Psychodynamic concepts such as social presence, subjective deprivation and projective processes offer interpretations of personal and relational experiences, but they are not universally established causes of sexual dysfunction or orientation.

Development of the Object of Desire

In psychodynamic theory, the object of desire is the person, experience or imagined state towards which an individual's motivation is directed. It may involve memories, fantasies, bodily sensations and emotional expectations, developing throughout life. Desire and love may overlap, but love can also involve affection, generosity and concern for another person's well-being. Emotional investment in relationships may sometimes involve jealousy or possessiveness. The representation of a desired person may be influenced by sensory experiences, memories, fantasies and expectations of intimacy, and may contribute to attraction, attachment and partner preferences.

Some psychodynamic interpretations suggest that attraction to unconventional physical features may reflect personal associations, memories of affection or qualities an individual wishes to recognize in themselves. Luis Cencillo proposed that some homoerotic desire might involve a longing for friendship, acceptance, trust or physical warmth, but these ideas are theoretical accounts rather than established causes of homosexuality. Personal well-being may involve self-acceptance, identity integration, meaningful relationships, flexibility and the ability to cope with difficulties. Related psychological models emphasize personal growth, purpose, positive relationships and adaptive coping.

Sexual Desire

Sexual desire, or libido, is the motivation for erotic activity through fantasy, masturbation or sexual experiences with a partner. It varies among individuals and throughout life, influenced by hormonal, psychological and general health factors. Desire may be spontaneous or responsive to physical stimulation and emotional connection. Although male desire is often described as more spontaneous and influenced by testosterone, and female desire as more responsive to physical and emotional context, these are broad tendencies rather than universal rules. Luis Cencillo's psychodynamic model identifies ten constants of desire, including symbolic satisfaction, illusion, saturation, cyclicity, fixation and segmentation. In this framework, desire is shaped by physical characteristics as well as memories, expectations and symbolic meanings. Satisfaction, frustration and substitution may alter its intensity or direction, while prolonged frustration may lead to reduced desire, aversion, mourning or displacement towards another object or form of gratification. These are theoretical descriptions rather than universal responses.

Cencillo proposes that satisfaction may reduce desire, produce saturation or reinforce it through repetition. When gratification becomes strongly associated with a particular activity or symbolic experience, a person may focus on one stage of sexual interaction, a process he calls segmentation. Desire may also follow cycles of satisfaction and renewed demand, and intense experiences may raise expectations. In his framework, desire may become obsessive when rigid patterns interfere with flexible behaviour, while ataxia describes how such patterns may disrupt other areas of life. Sexual desire is part of a person's wider motivational life and needs to be integrated with relationships, work and personal responsibilities. Jacques Lacan's perspective also emphasizes the symbolic and emotional meanings of desire beyond the physical object. Desire varies considerably, and intensity alone does not indicate psychopathology; clinical concern is more relevant when there is loss of control, significant distress or impairment.

Psychic Anatomy of Sexuality

The chapter compares the study of bodily anatomy and biochemistry with efforts to understand the organization of the psyche. Luis Cencillo's psychodynamic model identifies the dynamic basis, components, constants and principles, and interactional economy, describing libido as basic psychic energy involved in drives, tendencies, desires, emotions and fantasy. Contemporary neuroscience explains sexual motivation and response through interconnected brain regions and hormonal systems, including the hypothalamus, hormonal regulation pathways, dopaminergic reward systems, the amygdala, insula and cortical regions. Classical psychoanalysis emphasizes unconscious processes, drives, fantasies and early experiences, but these historical concepts should be distinguished from neurobiological explanations. Anxiety, aversion, psychological conflict and relational factors may affect sexual functioning, although no single explanation applies to everyone. The chapter also uses wave-particle duality as a metaphor for unconscious life, not as a scientific equivalence between quantum physics and the psyche.

Sexuality involves bodily experience as well as communication, emotional availability, affection and shared experiences. Verbal and non-verbal exchanges, including gestures, touch and physical closeness, can contribute to intimacy, while communication patterns, alliances, interruptions and barriers shape relationships. Each partner has a distinct psychological, bodily and social identity, and relationships may support or challenge a person's sense of self. Classical psychoanalytic theories proposed that parental relationships and identification influence personality and gender expression, but they do not establish that parental roles determine sexual orientation or gender identity.

Contemporary psychology distinguishes sexual orientation, gender identity, gender expression and sexual interests as separate dimensions. Children develop through interactions with family, peers and society; warmth, empathy and emotional expressiveness may be learned within family relationships but do not determine sexual orientation. Psychological defences are also described as processes that help preserve a sense of coherence and protect against difficult experiences.

Discussion

This research critically examines Luis Cencillo's contributions to the understanding of sexual orientation and compares them with contemporary scientific knowledge. The analysis identifies points of theoretical agreement as well as limitations in light of advances in genetics, neuroscience, endocrinology, developmental psychology, and the social sciences.

Contemporary research understands sexual orientation as a complex, multifactorial phenomenon involving interactions among genetic, prenatal hormonal, epigenetic, neurobiological, psychological, and environmental factors. No single factor adequately explains its development. This broad perspective partly corresponds with Cencillo's integrative approach, which emphasized the interaction of biological, psychological, social, and cultural dimensions rather than relying on a single explanation.

Cencillo's attention to personal biography and identity development also remains relevant. Contemporary psychology recognizes that experiences, cognitive processes, relationships, and sociocultural contexts influence how individuals understand and express their identities. However, sexual orientation is not considered a voluntary choice or the direct result of particular life experiences. Personal history may shape its expression and interpretation without establishing its origin.

His emphasis on the unity of the person is compatible with biopsychosocial approaches, which integrate biological, psychological, and social levels of analysis. His concern for individuality and human dignity also supports a person-centered understanding of sexuality and respect for sexual diversity.

Nevertheless, Cencillo's explanations must be interpreted within their historical context. Many of his psychological and anthropological hypotheses were developed before contemporary research methods and evidence became available. Some psychodynamic interpretations lack sufficient empirical support, and current research does not establish that particular family characteristics, educational styles, or childhood experiences determine sexual orientation. His work is therefore best understood as a historically significant philosophical, anthropological, and clinical contribution rather than a definitive scientific explanation.

Cencillo's lasting value lies largely in his effort to understand sexuality as inseparable from the person as a whole. His interdisciplinary perspective encourages dialogue between biology, psychology, philosophy, and the social sciences. Although some of his concepts require reinterpretation, his emphasis on complexity, individuality, and avoiding reductionism remains relevant to contemporary discussion.

Future research should continue integrating genetics, epigenetics, neuroimaging, developmental psychology, and social-science methods to investigate the interaction of factors involved in sexual orientation. Scientific models remain

open to revision as methods and evidence develop. Cencillo's work can contribute to this discussion as a historical and integrative perspective, provided its hypotheses are distinguished from empirically established findings.

Conclusions

This research demonstrates that understanding human sexuality requires an interdisciplinary approach integrating psychology, biology, neuroscience, psychiatry, and the social sciences. The comparison of Luis Cencillo's work with contemporary evidence identifies ideas that remain theoretically relevant and others that require reinterpretation.

Cencillo's emphasis on personal integration, identity, and coping with difficulties has parallels with contemporary psychological perspectives, although the theoretical frameworks differ. Modern research distinguishes biological sex, gender identity, gender expression, and sexual orientation as related but separate dimensions of human development. Sexual desire varies in intensity among individuals and throughout life. Strong desire or repeated behavior does not by itself indicate a disorder; clinical concern depends on factors such as loss of control, significant distress, or impairment in everyday functioning. Some of Cencillo's observations about fixation and repetition can be discussed alongside later psychological concepts, while recognizing their different theoretical foundations.

The available evidence indicates that sexual orientation has a multifactorial origin. Genetic research suggests partial genetic contributions, while prenatal biological factors and other developmental influences may also be involved. No single gene or biological marker determines orientation, and findings do not establish genetic determinism. Research on neuroanatomical and neuroendocrine differences remains ongoing and does not establish definitive causal relationships.

Human sexual development involves interacting chromosomal, genetic, hormonal, and embryological processes. Differences of sex development require distinction from sexual orientation and gender identity. Likewise, contemporary scientific and health frameworks do not classify homosexuality as a mental disorder. Well-being among people with diverse sexual orientations is associated with factors including family support, social acceptance, and freedom from discrimination. For children raised by same-sex couples, the reviewed evidence emphasizes the relevance of social rejection, bullying, and stigma rather than parental sexual orientation itself.

Overall, the research supports an integrative understanding of sexual orientation that cannot be reduced to one biological, psychological, or environmental cause. Cencillo's work remains valuable for its historical and anthropological perspective and its emphasis on understanding the whole person. However, his hypotheses should be distinguished from conclusions supported by current empirical research. Continued interdisciplinary investigation and critical dialogue between historical theories and contemporary evidence can deepen understanding of sexual diversity while respecting individual complexity and dignity.

Bibliography

- [1]. Ashley, R. A., Barthold, J. S., & Kolon, T. F. (2010). Cryptorchidism: Pathogenesis, diagnosis, treatment and prognosis. *Urologic Clinics of North America*, 37(2), 183–193. <https://doi.org/10.1016/j.ucl.2010.03.002>
- [2]. Bergman, J. (2026). *The problem of homosexual behavior*. Creation Summit Publishing.

- [3]. Botella, J. (1997). La evolución de la sexualidad y los estados intersexuales. Ediciones Díaz de Santos.
- [4]. Burmeister, L., Palermo, G. D., & Rosenwaks, Z. (2001). IVF: The new era. *International Journal of Fertility and Women's Medicine*, 46(3), 137–144.
- [5]. Buss, D. M. (2009). La evolución del deseo: Estrategias del emparejamiento humano. Alianza Editorial.
- [6]. Cartagena Garcés, R. (2024). Orientación sexual desde el hogar y la escuela. Independently published.
- [7]. Cencillo, L. (1975). Raíces del conflicto sexual. Guadiana de Publicaciones.
- [8]. Cencillo, L. (1978). Conflictos de la sexualidad infantil. CISSA.
- [9]. Cohen, J. (1991). Assisted hatching of human embryos. *Journal of In Vitro Fertilization and Embryo Transfer*, 8(4), 179–190. <https://doi.org/10.1007/BF01130802>
- [10]. Conejero Sandoval, J. (2015). Orientación sexual en adolescentes: Estudio a través de cuestionario autoaplicable. Editorial Académica Española.
- [11]. DeCecco, J. P. (2018). The heterosexual and homosexual identities: The normalization of sexual relationships. FourCats Press.
- [12]. Fiegel, H. C., Rolle, U., Metzger, R., Gfroerer, S., & Kluth, D. (2011). Embryology of the testicular descent. *Seminars in Pediatric Surgery*, 20(3), 170–175. <https://doi.org/10.1053/j.sempedsurg.2011.03.007>
- [13]. Foley, R. A., & Lewin, R. (2003). Principles of human evolution (2nd ed.). Blackwell Publishing.
- [14]. Freud, S. (1983). Tres ensayos sobre teoría sexual. Alianza Editorial.
- [15]. Gafo, J. (Ed.). (1997). La homosexualidad: Un debate abierto. Desclee de Brouwer.
- [16]. Gálvez-Ontiveros, Y., Páez, S., Monteagudo, C., & Rivas, A. (2020). Endocrine disruptors in food: Impact on gut microbiota and metabolic diseases. *Nutrients*, 12(4), 1158. <https://doi.org/10.3390/nu12041158>
- [17]. González de Alba, L. (2003). La orientación sexual/The sexual orientation. Paidós.
- [18]. Iniesta, R., Guinó, E., & Moreno, V. (2005). Análisis estadístico de polimorfismos genéticos en estudios epidemiológicos. *Gaceta Sanitaria*, 19(4), 333–341. <https://doi.org/10.1157/13078029>
- [19]. Iriarte, V. (2000). Educación sexual en la escuela: Guía para el orientador y púberes adolescentes. Paidós.
- [20]. Jones, W. E. (2016). True homosexual experiences: Boyd McDonald and Straight to Hell. We Heard You Like Books.
- [21]. Jouve de la Barreda, N. (2020). La epigenética: Sus mecanismos y significado en la regulación génica. *Cuadernos de Bioética*, 31(103), 405–419. <https://doi.org/10.30444/CB.79>
- [22]. Kaplan, R. W. (1978). Der Ursprung des Lebens: Biogenetik, ein Forschungsgebiet heutiger Naturwissenschaft (2nd rev. ed.). Thieme.
- [23]. Katchadourian, H. A. (2017). La sexualidad humana: Un estudio comparativo de su evolución. Fondo de Cultura Económica.
- [24]. Laplanche, J. (2011). Freud and the sexual: Essays 2000–2006. The Unconscious in Translation.
- [25]. López-Ballesteros, L. (2025). Ensayos sobre sexualidad y psicoanálisis: Comprender la mente humana—sexualidad, inconsciente y neurosis en el psicoanálisis clásico. Independently published.

- [26]. Marioni, R. E., Shah, S., McRae, A. F., Chen, B. H., Colicino, E., Harris, S. E., Gibson, J., Henders, A. K., Redmond, P., Cox, S. R., Pattie, A., Corley, J., Murphy, L., Martin, N. G., Montgomery, G. W., Feinberg, A. P., Fallin, M. D., Multhaup, M. L., Jaffe, A. E., . . . Deary, I. J. (2015). DNA methylation age of blood predicts all-cause mortality in later life. *Genome Biology*, 16, Article 25. <https://doi.org/10.1186/s13059-015-0584-6>
- [27]. Marroquí, M. (2023). *Eso no es sexo: ¡Otra educación sexual es urgente!*. Crossbooks.
- [28]. Mazanti, L. (2018). *Sexo real: Recupera tu inteligencia sexual con el mindfulness erótico*. Urano.
- [29]. McKenna, T. (2019). *Orientación sexual Gr. 6–Adult: Serie de comprensión del género y la sexualidad*. Classroom Complete Press.
- [30]. Meeks, J. J., & Schaeffer, E. M. (2011). Genetic regulation of prostate development. *Journal of Andrology*, 32(3), 210–217. <https://doi.org/10.2164/jandrol.110.011577>
- [31]. Mughal, B. B., Fini, J.-B., & Demeneix, B. A. (2018). Thyroid-disrupting chemicals and brain development: An update. *Endocrine Connections*, 7(4), R160–R186. <https://doi.org/10.1530/EC-18-0029>
- [32]. Na Pai. (2026). *El capital sexual: Todo lo que llegamos a hacer por amor y un poco de sexo*. Bellaterra Edicions.
- [33]. Neal, A. (2025). *La educación sexual: Libro de respuestas*. Kindle Direct Publishing.
- [34]. Núñez Gil, J. (2022). *Los mitos de la homosexualidad: Más allá de la identidad sexual y la ideología de género*. Independently published.
- [35]. Olea Serrano, N. (2019). *Libérate de tóxicos: Guía para evitar los disruptores endocrinos*. RBA Libros.
- [36]. Opizzo, J. A. (1963). *Alteraciones sexuales: Diagnóstico y orientación*.
- [37]. Ormart, E. B. (2021). *Educación sexual integral en una sociedad hiperconectada*. SB Editorial.
- [38]. Peramato Martín, T. (2014). *Desigualdad por razón de orientación sexual e identidad de género, homofobia y transfobia*. Aranzadi.
- [39]. Persson, L., Carney Almroth, B. M., Collins, C. D., Cornell, S., de Wit, C. A., Diamond, M. L., Fantke, P., Hassellöv, M., MacLeod, M., Ryberg, M. W., Søgaard Jørgensen, P., Villarrubia-Gómez, P., Wang, Z., & Hauschild, M. Z. (2022). Outside the safe operating space of the planetary boundary for novel entities. *Environmental Science & Technology*, 56(3), 1510–1521. <https://doi.org/10.1021/acs.est.1c04158>
- [40]. Piedra, M. (2022). *Lo que SÍ preguntan los adolescentes*. Larousse.
- [41]. Priego, T. (1987). *Comprender la sexualidad, para una orientación integral*. San Pablo.
- [42]. Roughgarden, J. (2005). *Evolução do gênero e da sexualidade*. Editora Planta.
- [43]. Russell, S. T., & Horn, S. S. (Eds.). (2016). *Sexual orientation, gender identity, and schooling: The nexus of research, practice, and policy*. Oxford University Press. <https://doi.org/10.1093/med:psych/9780199387656.001.0001>
- [44]. Sadler, T. W. (2007). *Langman: Embriología médica (10.ª ed.)*. Editorial Médica Panamericana.
- [45]. Stekel, W. (2015). *Bi-sexual love: The homosexual neurosis*. Smith Press.
- [46]. Tellerías, L., & Paris, E. (2008). Impacto de los tóxicos en el neurodesarrollo. *Revista Chilena de Pediatría*, 79(Supl. 1), 55–63. <https://doi.org/10.4067/S0370-41062008000700010>

- [47]. Tobin, E. W., Sliker, R. C., Luijk, R., Dekkers, K. F., Stein, A. D., Xu, K. M., Slagboom, P. E., van Zwet, E. W., Lumey, L. H., & Heijmans, B. T. (2018). DNA methylation as a mediator of the association between prenatal adversity and risk factors for metabolic disease in adulthood. *Science Advances*, 4(1), eaao4364. <https://doi.org/10.1126/sciadv.aao4364>
- [48]. Torices Rodarte, I. (2007). Orientación sexual para personas con discapacidad: Aspectos generales y específicos. Editorial MAD.
- [49]. Vanegas, A. (2014). Diversidad sexual e identidad de género: Derechos de la diversidad sexual. CreateSpace Independent Publishing Platform.
- [50]. Vázquez García, F. (2022). Historia de la homosexualidad masculina en Occidente. Los Libros de la Catarata.
- [51]. Vázquez García, F. (2023). Historia de la homosexualidad femenina en Occidente. Los Libros de la Catarata.
- [52]. Verdaguer, X. (2024a). Cuídate: Las claves para equilibrar tu cuerpo y transformar tu salud. Grijalbo.
- [53]. Verdaguer, X. (2024b). Tu salud empieza aquí. Grijalbo.
- [54]. Wilton, T. (2000). (Des)orientación sexual: Género, sexo, deseo y automodelación. Bellaterra Edicions.