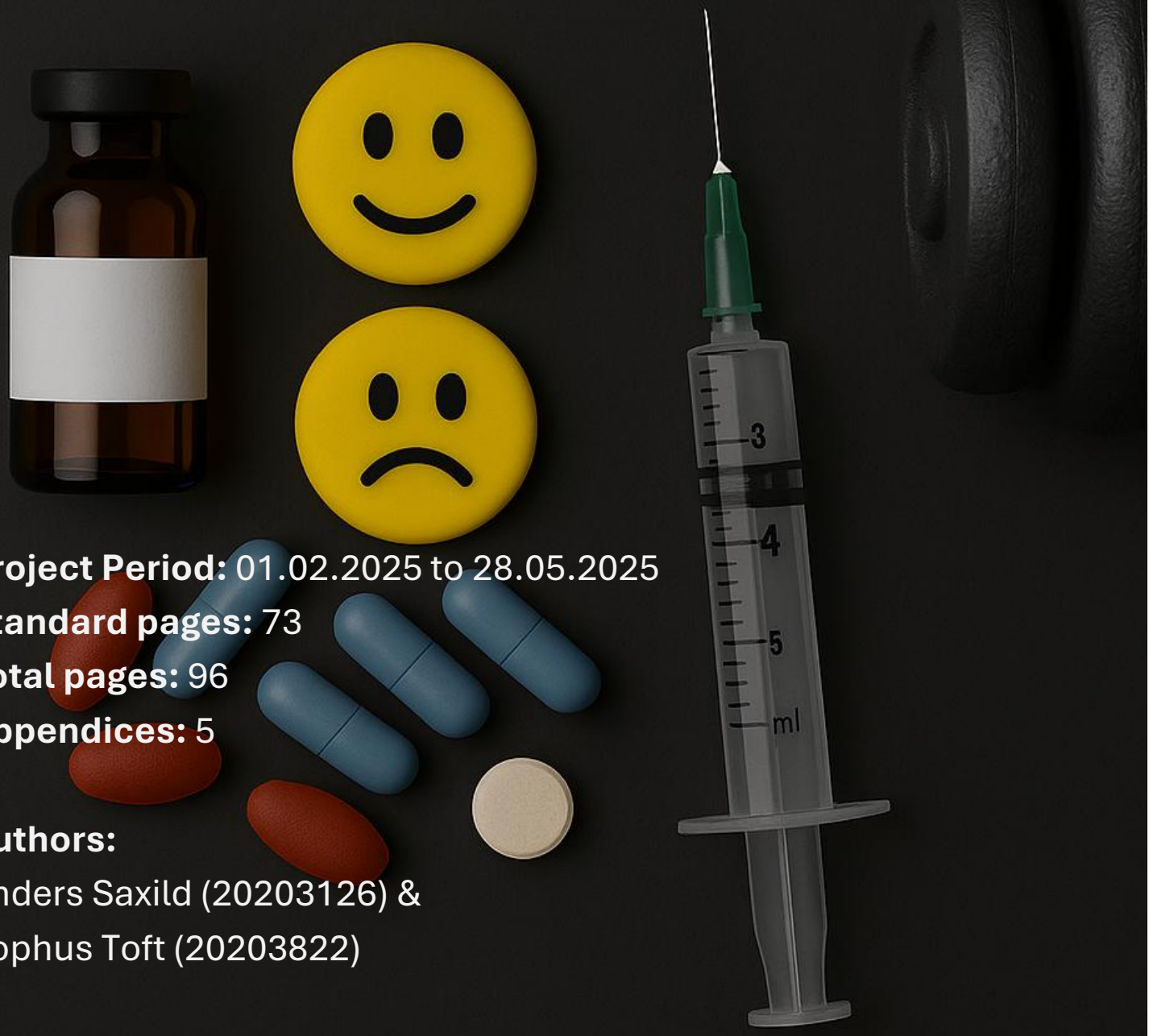
GEAR, GAINS AND GOODWILL

UNDERSTANDING DIGITAL DANISH PIED MARKETS



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Abstract

This thesis explores the emergence and normalization of performance and image enhancing drugs (PIEDs) within Danish online subcultures, focusing on how digital platforms mediate community formation, discourse, and market dynamics. Through a techno-anthropological and symbolic interactionist lens, we investigate how online communities, particularly closed Facebook groups, construct and sustain alternative expert knowledge, discursive frameworks, and marketplace behaviours around PIED use. Drawing on netnographic observations, interviews, and ethnographic methods, the study reveals that social media platforms not only affords the distribution of PIEDs but also normalise their use through peer-to-peer advisory practices, influencer narratives, and algorithmic amplification. Sellers strategically manage their digital identities to balance anonymity with credibility, while buyers contribute to the community's norms through referral systems and informal regulation. Our findings demonstrate that the design and features of digital platforms play an active role in shaping the socio-technical landscape of PIED use, lowering traditional access barriers and contributing to the normalization of self-medication. In doing so, this study contributes to a broader understanding of digital health subcultures in Denmark and the evolving boundaries of medical legitimacy, risk perception, and informal expertise.

Preface

With a strong passion for sport, our interest in the world of Performance and Image Enhancing Drugs began through conversations with friends and peers who are involved in these digital communities. As Techno-Anthropologists, our curiosity about culture and technology led us to see a need to explore and understand these practices in a Danish context. We wanted to contribute to a broader understanding of how technology, culture, and the body come together in this space.

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Introduction

The digitalization of social interaction has fundamentally reshaped how we engage with topics related to body image, fitness, and self-medication. Amongst the consequences of this shift is the emergence of online communities centered around the use of performance and image enhancing drugs (PIEDs). These substances were once confined largely to elite athletic circles and specialized fitness communities. Today, however, they are increasingly promoted, discussed, and traded on social media platforms (Turnock, 2022). This transformation raises important questions about how these digital environments influence societal attitudes toward self-medication, risk, and health. Online platforms do not simply provide a neutral space for information exchange, they actively mediate and amplify discourses that normalize, and in some cases glamorize, the use of PIEDs. Through anonymized communication, peer-to-peer advice, and the proliferation of influencer-led "fitspiration" narratives, users are exposed to a range of perspectives that often diverge from mainstream medical or legal advice. These subcultures foster a sense of belonging and identity that can legitimize practices otherwise stigmatized or illegal in offline settings (Gibbs, 2023).

As techno-anthropologists, we seek to explicate both the sociocultural meanings of PIED use and the digital infrastructures that make this community possible. The techno-anthropological lenses lead us to treat the technological features of the field as active participants in meaning-making, and not as a passive backdrop. This approach matters because understanding digital PIED cultures today requires more than just knowing what is said, as it demands that we also ask how and why it’s said, and what role technology plays in that. Within the Danish context, these phenomena remain esoteric, despite the possible effects on wider public health. The ease of access to PIEDs through online marketplaces, often facilitated by encrypted messaging and algorithmic content promotion, have led to new frameworks of underground healthcare practices. As these communities evolve, the lines between formal and informal expertise becomes blurred. Drawing on netnographic fieldwork, observational data from closed Facebook groups, and interviews with community participants and experts, this paper seeks to explore how digital subcultures in Denmark shape the perception, normalization, and advisory discourse surrounding PIEDs. By examining the interplay of technological structures, user behaviour, and community norms, this study aims to deepen the understanding of these online environments.

Research Question

In today's digital society, online spaces have emerged as powerful arenas for exchanging ideas and shaping social norms. Our interest in this subject is underscored by the rising prevalence of discussions surrounding PIEDs on social media, and their influence on societal norms. PIEDs, for the remit of this thesis, are "*substances that enhance muscle growth and reduce body fat*" (Underwood 2017: 78). Spanning from personal trainers, fitness influencers, and sports professionals on platforms like Instagram and TikTok, there is a growing trend of glorifying and normalizing the use of PIEDs, especially among younger audiences. This trend raises critical questions about the transformation of public perceptions of risk and safety, when drugs become mainstream through digital channels. Moreover, this digital glorification is not only reshaping societal and cultural attitudes toward PIEDs, but also fostering entirely new markets. These emerging online marketplaces potentially increase the availability of PIEDs to the ordinary person, as transactions become more anonymized and relationships between sellers and buyers become less interpersonal. This study aims to investigate whether the migration of these markets from analog to online, is directly linked to greater access and altered health behaviours on a broader scale. With our research question being:

How do online subcultures and digital communities shape the perception, normalization, and advisory discourse around performance- and image-enhancing drugs (PIEDs) in a Danish context?

We argue that this research question calls for an exploration of how these digital environments fundamentally reshape attitudes and behaviours regarding PIEDs in Denmark. We see a tendency of members exchanging personal experiences, expert opinions, and peer guidance in a setting that provides anonymity, but also alternative discursive frames being established that challenge conventional knowledge. This ecosystem accelerates the spreading of information while solidifying group identities and shared values, leading to the normalization and even glorification of practices traditionally met with skepticism or concern. Moreover, this digital normalization is giving rise to entirely new online marketplaces, where the increased availability of PIEDs is combined with an anonymized bond between sellers and buyers, moving away from the more traditional market dynamics.

Delimitation of the Field

This study has concentrated on what the Human Enhancement Drugs Network (HEDN) refers to as "Muscle Drugs" and "Weight Loss Drugs" (HEDN, 2020) under the category of PIEDs. HEDN notes that the most common muscle drugs are anabolic androgenic steroids (AAS) and human growth hormone (HGH) and also highlights that users frequently practice polypharmacy, often combining these with other enhancers such as weight-loss drugs like semaglutide and human chorionic gonadotropin (HCG). AAS constitute a group of drugs that encompass testosterone or its synthetic analogues. These substances are widely utilized to enhance muscle performance and strength, elevate athletic prowess, and help achieve a lean, muscular physique. These substances, which are the most commonly used PIEDs, are ordinarily consumed as part of a so called "cycle". This entails a time period in which a specific amount of a given substance is ingested, typically eight to twelve weeks, before the user is "of-cycling", wherein they assume a period of abstinence (Christiansen, 2020).

Turning back to our study, we limited our focus to exploring how online subcultures, specifically in a Danish context, shape the perception and normalization of these PIEDs. Zooming in on these digital communities, our study aims to provide insights into how these online environments redefine, access, trust and the overall cultural framing of PIEDs. This shift has transformed a traditionally expert-led market into one that attracts a broader, less culturally embedded audience, as seen earlier (Christiansen, 2020). While offline markets still exist, the online environment now provides an alternative space for those lacking these conventional community connections, as we see a tendency of separate grey-zone markets blending together online.

Following our delineation of the field, understanding the legal landscape that frames the use and distribution of these substances in Denmark is also important. Denmark employs a dual regulatory approach that both safeguards public health and preserves the integrity of sports. On one hand, the Danish Medicines Act (Lægemiddelloven) strictly controls PIEDs as prescription drugs, ensuring that substances like AAS and HGH are accessible only within approved medical contexts (Retsinformation, n.d.). This means that, outside of legitimate therapeutic use, such as hormone replacement therapy or the treatment of specific conditions, all possession and sale are illegal without proper authorization.

On the other hand, an anti-doping framework regulated by the self-governing public institution Anti Doping Danmark, complements these regulations. Since the enactment of the 2005 Act on Promotion of Doping-Free Sport, Denmark has actively countered illicit PIED use in sports through comprehensive testing protocols and administrative measures (Anti Doping Danmark, n.d.). This framework not only governs elite athletes under National Anti-Doping Rules, in full compliance with the World Anti-Doping Agency (WADA) Code, but also extends to non-elite and recreational participants. Measures such as mandatory random sampling in local fitness centres in collaborations with Anti Doping Denmark further underlines the Danish Government's commitment to preventing PIED abuse amongst citizen (Anti Doping Danmark, n.d.).

Evolving attitudes toward fitness and usage of PIEDs

Alongside the transformational evolution of the digital PIED markets, it is also crucial to explore the evolution of the attitudes towards the usage of PIEDs. It is well-documented, that the health and fitness industry has experienced a meteoric growth in the last two decades (Christiansen, 2020). This market also encompasses a broad range of goods and services, stretching from health supplements and wearable fitness trackers to personal training, customized diet plans, CrossFit programs, and activewear. During the Covid-19 pandemic in 2020, both lockdowns and restrictions have even further accelerated the growth of the online fitness sector, leading to an overall digitization of health and fitness. On these platforms, "fitspiration" content such as fitness-related images and texts meant to inspire a healthy lifestyle is widespread. Users often share their workout routines paired with motivational quotes and training tips, with such content frequently amplified by fitness influencers, online coaches, and digital prosumers (Tiggemann & Anderberg, 2020). As concluded by Tiggemann and Anderberg (2020), these influencer-driven fitspiration images, which often idealize the male physique through depictions of muscularity and bare chests, and the female physique through portrayals of thinness and toned bodies, can have adverse effects on both men's and women's body ideals. Their findings suggest that these idealized representations contribute to narrow standards of attractiveness, potentially leading to increased body dissatisfaction and so called "body dysmorphia". Another prevalent trend in the digital health and fitness space is the sharing of "before and after" photos by influencers and everyday gym-goers. While often intended to inspire, these

images are sometimes edited, or portray unrealistic expectations (Tiggemann & Anderberg, 2020).

Over the past several decades, societal attitudes toward the use of PIEDs have also undergone significant transformation. Initially, these substances were predominantly associated with professional athletes. Early on, the bodybuilding community became emblematic of AAS use, as these were viewed as indispensable instruments for achieving the extreme, sculpted physiques that define the subculture. Early doping scandals in competitive sports also framed PIED use in a negative light (Fraser et al., 2020). This early association established a powerful negative stigma, that framed steroid use as both a moral failing and a threat to the legitimacy of competitive endeavours. As the use of PIEDs permeated out of competitive sports, recreational use became more common. These users presented a different dilemma, as they did not intend to compete in professional sports but were looking to increase their own physical performance or alter their appearance for personal reasons. This presented a new challenge, as the main concerns regarding their recreational use were PIEDs side effects on health. Largely the focus of this study is on recreational use, as the reasoning and practice differ from that of professional sports. Their decisions are typically framed as a balance between the pursuit of self-improvement, and the ethical or health-related risks associated with unsupervised steroid consumption (Fraser et al., 2020).

In parallel with these developments, the emergence of online communities has dramatically altered how PIED use is perceived and discussed. Digital platforms have as, earlier mentioned, given rise to subcultures where steroid use is not only normalized but, in some cases, actively celebrated. These online fora offer spaces for users to share personal experiences, exchange practical advice, and challenge mainstream narratives. Increasingly, social media has also played a role in driving new users towards PIEDs (Turnock & Townshend, 2022). In this context, social media both presented, especially young people, with new physical ideals, and the notion that these ideals were the result of PIED use. Subcultures such a niche fitness community, play a part in the adaptation of PIEDs into a recreational workout regime, individual testimonials and communal reinforcement plays a part in framing PIEDs as both safe and necessary (Van hout & Kean, 2015). Detailed discussions in these spaces range from sharing precise workout routines and nutritional strategies, to providing firsthand accounts of steroid-related

challenges and successes. Trust and reputation are pivotal in sustaining these online communities. Continuous engagement and visible markers of credibility, such as digital badges, endorsements, or high levels of interaction, help to identify reliable sources of information (Bandura, 1991). These indicators reinforce community norms around accountability and quality, as repeated exposure to trusted voices encourages the internalization of best practices among members (Bandura, 1991). Over time, this cycle of peer reinforcement not only improves individual competence but also contributes to the evolution of a cohesive subculture that redefines conventional societal perceptions of PIED use (Turnock & Townshend, 2022). Through these evolving dynamics, the discourse surrounding PIED use has shifted from a simplistic condemnation rooted in early athletic scandals to a complex dialogue that encompasses ethical, medical, and cultural dimensions. This multifaceted narrative reflects broader changes in societal values and highlights the transformative impact of digital communication on public health and identity formation (Christiansen, 2020).

The digital transformation of PIED markets

Antonopouls and Hall (2016) observed that the digitization of AAS trafficking is reshaping the PIED market within the UK context. Traditionally transactions within this market were conducted face-to face in discrete physical settings, such as gym toilets and changing rooms. In these environments personal networks played a central role, as suppliers were embedded within a web of trust, where cultural capital, which manifested itself through reputation, respect and acknowledged expertise, often outweighed the financial gains (Antonopoulos & Hall, 2016). With the emergence of digital platforms, these socially mediated exchanges are rapidly being replaced by online interactions that offers both anonymity and an extended geographic reach. This shift also undermines the conventional reliance on interpersonal networks, and introduces a market dynamic, that is more economically driven, even as new forms of credibility and trust are negotiated in these digital environments. The transformation also reconfigures the symbolic barriers that once governed access to these markets, as barriers that depended on cultural or bodily capital, which now have been broadened, expanding the potential user base (Antonopoulos & Hall, 2016). Following this idea, the market has historically only been accessible to those who were deeply embedded in the fitness community and possessed significant expertise, acting as insiders. However, recent changes in these markets and the environments, have eroded

these long standing cultural barriers, which has paved the way for a broader range of individuals to enter the market as consumers (Christiansen, 2020).

As mentioned, recent studies reveals significant transformational tendencies within the PIED market, and Antonopoulos and Hall (2016) also states that the industry surrounding these markets has shifted dramatically online, fostering digital relationships between sellers and buyers. This digital migration allows these new consumers, who again might lack traditional cultural or bodily capital, to overcome the barriers once imposed by the strictly fitness oriented networks. In this new environment, market participants are less tied to conventional fitness communities, and more driven by profit and broader accessibility from the affordances of these online platforms (Turnock, 2022). Alongside this digital evolution, Turnock (2022) observed a trend toward polydrug consumption among the users, as they are increasingly combining PIEDs with a wider array of recreational substances. This becomes a pattern that reflects the market's broader, profit-focused reorientation. Showcasing a movement toward a decentralized highly flexible online marketplaces, where traditional hierarchies have given way to more globally accessible networks of suppliers. Furthermore recent studies have explored an evolving trend in motivations for the use of PIEDs, as there being a growing emphasis on medicalized wellbeing rather than traditional athletic performance. This shift is fundamental in the trend of individuals sourcing products online for self-medicating purposes, like mostly elderly individuals using self-prescribed testosterone replacement therapy (TRT), which reflects a broader move toward a pharmaceutical approach to health (Turnock, 2022). Cox et al. (2023) also observed that sellers on Instagram and TikTok strategically use hashtags such as #anabolic, #perfomanceenhancement and even #libido to boost the visibility of their posts, making it easier for consumers to locate the products they seek out. These trends also support Antonopoulos and Halls' (2016) arguments from their study, that entry barriers into the PIED markets have been significantly lowered. Users now only need to create or have an existing account on the platform, combined with low level skills to access a wide array of potent substances (Antonopoulos & Hall, 2016).

The digital structures of online platforms architecting PIED markets and communities

To better understand how the digital structures of online platforms shape community dynamics and enable the normalization of behaviours and elicitation of PIEDs, this section clarifies the foundational elements that drive these processes and look to other literature on the subject to reveal how the technical architecture of digital spaces not only supports but also actively steers online interactions and cultural narratives. Focussing on the mechanisms through which digital communities develop alternative discourses and market dynamics, ultimately influencing broader societal perceptions and behaviours.

These digital structures play a crucial role in shaping the environments and their dynamics, particularly within the domain of PIED markets. Online platforms like Instagram Tiktok do more than just provide a space for interactions as they actively construct and influence the behaviours and cultural narratives that emerge within these communities (Cox, et al., 2023). As demonstrated by Cox et al., (2024) in an Australian context, the algorithms and interface designs of these platforms such as recommended accounts and hashtags functions as previously mentioned, facilitate the rapid formation of digital networks that not only supports but also normalize PIED-related activities. In their study they have identified a dual supplier model that is relevant for our understanding of these dynamics. The first supplier model, being direct suppliers, includes individual sellers as well as laboratory and shop accounts, which employs a variety of marketing techniques such as hashtags emojis and visually striking product imagery. These tactics help to establish trust and legitimacy on the platforms, as they mimic the aesthetic and narrative norms of broader fitness communities. In parallel, they found that some influencers leverage their social capital to promote PIEDs indirectly. By directing followers to third-party sales platforms through discount codes and curated content, they subtly integrate drug promotion into a wider lifestyle context. The two separate approaches relate to gaining a better understanding of how these digital infrastructures not only facilitate the markets, but also how these activities related to PIEDs are weaved into the fabric of online subcultures (Cox et al., 2024). The use of different communication channels also further reinforce these market dynamics, as integration of secure or encrypted messaging services like Signal or Telegram enables direct contact between buyers and sellers in providing closure. This type of communication and connectivity reduces perceived risks and enhances consumer confidence, in contrast to the

traditional way of approaching dealers, contributing to a broader consumer base and normalization of this type of transaction within these digital spaces. As Cox, et al. (2024) study calls attention to, the affordances provided by modern digital platforms blur the lines between legitimate commercial interactions and illicit markets practices, making them an fundamental component of both harm reduction efforts and regulatory challenges. The architecture of digital platforms actively shapes the evolution of PIED markets by fostering network effects, promoting dual supplier models, and facilitating secure communication channels (Cox et al., 2024).

As additionally presented by Gibbs (2023) in his exploration of PIEDs marketing on Facebook and Instagram, digital platforms are not merely passive channels for communication. In his study he presents them as active shapers of community dynamics and market practices. Here, the digital environment is manipulated to foster a sense of community and authenticity, where even more secret operations such as underground laboratories surrounding PIEDs, mimic the aesthetics and engagement techniques of mainstream fitness brands. The interplay between public branding and encrypted, peer-to-peer communication creates a trust that seems to be a building block for these illicit markets (Gibbs, 2023). Gibbs findings also demonstrate that features like sponsored athlete endorsements, transformation imagery, and customer feedback mechanisms, work as well planned tactics from sellers that leverage the inherent digital structures of social media. For example, underground laboratory representatives utilize closed Facebook groups and overt brand affiliation, to build trust and signal legitimacy. These groups serve as controlled digital spaces where traditional notions of peer-to-peer endorsement and cultural embeddedness are maintained, even as transactions move into an online context. In contrast, independent resellers on Instagram often adopt a more stealth approach by using generic or masked profiles and curated fitspiration content to resonate with a broader, less culturally embedded audience (Gibbs, 2023).

Both Gibbs and Cox reinforce the idea that digital platforms are not just facilitators of PIED markets but active agents in shaping these ecosystems. Their findings demonstrate that platform structures, through algorithmic recommendations, engagement features, and seamless transitions to encrypted communication channels, play a crucial role in not only enabling these markets but also embedding them within broader online fitness and bodybuilding cultures. Similar to how Gibbs outlines the strategic use of Facebook and Instagram's functions, Cox et

al. emphasize the ways in which Instagram and TikTok's visual and network-based algorithms actively steer users toward PIED-related content. Both studies point out that these platforms are not neutral intermediaries, but instead serve as amplifiers of cultural narratives surrounding PIEDs. Recommendation systems in particular, function to reinforce and normalize PIED-related discussions, making the market more accessible and integrated within fitness communities.

Another insight from both studies, that is relevant to our study, is the role of influencers and social capital in sustaining these digital PIED markets. In Gibbs (2023), he explicates that underground labs and resellers use digital branding tactics that mirror mainstream fitness industries, creating an illusion of credibility and legitimacy. Cox et al. (2024) further expand on this by showing how influencers act as intermediaries, using their authority and engagement with clients etc. to direct potential buyers to suppliers while maintaining a degree of separation from direct sales. The cumulative effect is that these digital structures create a layered system of influence, where trust is socially engineered through both branding strategies and algorithmic reinforcement. Gibbs (2023) notes how Facebook groups and Instagram pages serve as front-facing spaces for engagement, with actual sales shifting to encrypted messaging apps like WhatsApp. Similarly, Cox et al. (2024) illustrate how influencers provide a bridge between mainstream fitness discourse and more discreet PIED networks. In both cases, platforms provide a structured yet flexible environment that allows illicit markets to thrive while minimizing risk for sellers.

Methods

The following chapter will present our methodological approach to data collection, and the considerations surrounding our choices. The vast majority of our data collection consists of observations, and observational notes, from closed Facebook groups, together with ethnographic image material that is not included in our observation set (the latter will be annotated as "screenshot"). We have also supplemented our netnographic data with qualitative text-based interviews with both sellers and buyers from these platforms. Furthermore, secondary literature and interviews with experts working in the field of regulation of PIEDs in a Danish context, contribute to our data collection. Our analytical and descriptive section will be based on our observations and conversations with both sellers and buyers, which we consider our primary empirical data. Therefore, our secondary data will mostly be used as background knowledge and is applied, quoted, etc. in the relevant contexts. The chapter will start off with an introduction to the netnographic approach, our primary data collection method, and then move to considerations regarding the netnographic empirical work in our context. The last part of the chapter will focus on general reflections including both ethical and epistemological considerations.

Data Collection and Co-creation: A Netnographic approach

In the process of researching online PIED markets, we have utilized a range of ethnographic methods that blend qualitative and quantitative techniques. As our fieldwork is exclusively online, our primary methodological framework is netnography, being the adaptation of traditional ethnographic methods to the digital realm (Kozinets, 2020). This approach is particularly suited to studying online communities, as the sale and discussion of PIEDs have increasingly migrated from physical venues such as gyms and training clubs to digital marketplaces (Piatkowski et al., 2024; Nyssanbayeva et al., 2024). Although the ends of netnography are similar to those of traditional ethnography, its means differ, as digital artefacts and interactions are the core objects of analysis in netnography.

A significant portion of our data collection relies on netnographic observations. An observation guide was developed based on definitions of PIEDs and the specific marketing practices found

in online markets. Each PIED-related post or advertisement serves as the focal point of observations. We captured the visual and textual context of these posts by taking screenshots, ensuring that both the content and associated interactions are preserved (Kozinets, 2020). Observations were then coded according to eight distinct parameters, allowing for comparisons across diverse online communities (Maxwell, 2010). Every recorded observation is accompanied by a detailed researcher note that provides context, initial impressions, and reflections. These thick descriptions help secure the validity of our co-created data (Costello et al., 2017; Kozinets, 2002). Given the illicit nature of transactions regarding PIEDs, we opted for an immersive, non-interactive observation strategy, avoiding active participation on the sales posts that might compromise both data integrity and ethical boundaries (Kozinets, 2020).

Complementing the observations are field notes, that capture our ongoing thoughts and experiences while navigating these online markets. Unlike observation notes tied to specific posts, these field notes provide a broader contextual understanding of the communities and the digital marketplace dynamics. This method is essential, as online PIED-markets must be interpreted in relation to broader social norms and evolving digital practices (Small & Colarco, 2022). Like the observations, the field notes are compiled through an immersive and non-interactive data collection strategy.

Our scouting process

To systematically collect the observational data from these online markets, primarily closed Facebook-groups involved in grey-zone sales and services, we applied for membership in a total of 60 groups, averaging around 3,600 members. These groups were identified through Facebook's internal recommendation algorithms. These algorithms suggested relevant communities based on our masked profiles' search history and the activity within groups to which we had already been granted access. The access requirements varied across the groups. In most cases, joining merely involved actively clicking the "*accept rules*" button, whereas some groups required vouching from existing members. An overview of these access requirements and group information is provided in the following table. In our overview, we not only document active groups but also tracked which ones have been closed by Meta and which continue to operate side community chats. These community chats often serve as entry points, or hubs,

where illicit sales activities take place. Private users engage in these chats under their real profiles and treating them as "safe spaces" similar to what we see on encrypted platforms like Telegram and Signal. Meta's moderation of private Messenger conversations is largely confined to algorithmic detection, which can easily be negated by using coded language, which we will touch upon later. These chats function as archives, storing all shared images, and messages. Utilizing this allowed us to locate specific keywords and join topic-specific sub-chats, which streamline communication between buyers and sellers:

		RED = CLOSED BY META				
GROUP NAME	PLATFORM	MEMBERS COUNT	ACCESS REQUIREMENTS	STATUS	POSTS PER DAY APPROX.	COMMUNITY CHAT AVAILABLE
BLACK MARKET FACEBOOK	FACEBOOK	24300	Accept rules	Member	94	
Dem der ved det, ved det	FACEBOOK	7500	Accept rules	Member	4	
Blackmarket	FACEBOOK	2700	Accept rules	Rejected	6	
Blackmarket	FACEBOOK	2400	Accept rules	Member	28	
Den sorte svane	FACEBOOK	1100	Accept rules	Member	6	
Kun det sorte marked	FACEBOOK	2400	Vouching by member + Add admin	Member	5	
Underworld	FACEBOOK	2800	Vouching by member + Add admin	Rejected	3	
Gadehandel - Sælg dine ting	FACEBOOK	10000	Accept rules	Member	33	
Gadehandel - Sælg dine ting 2	FACEBOOK	4853	Accept rules	Member	10	
Det sorte marked	FACEBOOK	286	Nothing	Member	0	
Gang i gaden	FACEBOOK	6000	Accept rules	Member	8	
Ulovlig marked 2	FACEBOOK	4800	Accept rules	Member	0	
Diskret handel	FACEBOOK	6000	Accept rules	Member	4	
BLACKMARKET DANMARK	FACEBOOK	510	Accept rules	Awaiting	4	
Det hemmelige marked	FACEBOOK	12600	Accept rules	Member	52	
Det hemmelige marked 2	FACEBOOK	5300	Accept rules	Member	10	
Hemmelig Blackmarket	FACEBOOK	2700	Nothing	Member	0	X
Jul i Blackmarket Diskret	FACEBOOK	7200	Nothing	Member	6	X
Jungle avisen 5	FACEBOOK	3100	Nothing	Member	1	
Jungle avisen 7	FACEBOOK	4000	Nothing	Member	1	
Schwarz handel	FACEBOOK	1400	Nothing	Member	1	
Det åbne marked.....	FACEBOOK	2700	Nothing	Member	2	
Diskret frihandel	FACEBOOK	906	Nothing	Member	1	
Diskret salg	FACEBOOK	985	Nothing	Member	1	
Hurtig handel DK	FACEBOOK	653	Nothing	Awaiting		
Blackmarket	FACEBOOK	6400	Nothing	Member	0	
Blackmarket 2	FACEBOOK	3300	Nothing	Member	0	
Det hemmelige marked NY	FACEBOOK	5400	Vouching by member + Add admin	Member	0	
NixBix CPH	FACEBOOK	81	Nothing	Awaiting	1	
Jul I BlackMarket Diskret 1	FACEBOOK	3100	Nothing	Member	5	
Backup grupperne/Mads Hansen's	FACEBOOK	1100	Nothing	Member	0	
hemmelig marked	FACEBOOK	3000	Nothing	Member	0	
SORTBØRSEN	FACEBOOK	882	Accept rules	Awaiting	3	
Jungle avisen 4	FACEBOOK	3600	Nothing	Member	0	
BLACKMARKET SECRETS	FACEBOOK	2300	Nothing	Member	0	X
Telegram & Signal	FACEBOOK	44	Nothing	Member	0	
Fortæl ikke naboen vi er her	FACEBOOK	1300	Nothing	Member	5	X
Det hemmelige marked NY 2	FACEBOOK	1200	Nothing	Member	2	
SORT	FACEBOOK	3100	Accept rules	Member	3	
Shhh	FACEBOOK	1800	Accept rules	Member	0	
Nixenbixen gen 2	FACEBOOK	4100	Accept rules	Member	0	X
Gadehandel 3	FACEBOOK	856	Nothing	Member	0	
Gadehandel 4	FACEBOOK	590	Nothing	Member	1	
Gadehandel 5	FACEBOOK	715	Nothing	Member	0	
Jul i BlackMarket Diskret 1	FACEBOOK	3600	Nothing	Member	0	
SORT	FACEBOOK	3500	Nothing	Member	0	
Diskret handel	FACEBOOK	8600	Accept rules	Member	13	
Blackmarket dk	FACEBOOK	5100	Nothing	Member	0	X
Dream market DK	FACEBOOK	2500	Accept rules	Member	7	X
Det hemmelige marked 1.0	FACEBOOK	957	Nothing	Member	10	
Danmark i sort	FACEBOOK	1300	Nothing	Member	0	
Gadehandel - Sælg dine ting 2 (NY)	FACEBOOK	3300	Accept rules	Member	0	
Gadehandel 4	FACEBOOK	653	Nothing	Member	0	
Gadehandel 5	FACEBOOK	809	Nothing	Member	0	
Gadehandel 3	FACEBOOK	1084	Nothing	Member	0	
BLACKMARKET DANMARK	FACEBOOK	10100	Accept rules	Member	0	X
nu er det jul igen diskret	FACEBOOK	5300	Accept rules	Member	0	X
DENMARK	FACEBOOK	2400	Accept rules	Member	0	

Fig. 1: The table provides an overview of the groups visited (Appendix 4).

Once granted access, we leveraged Facebook's built-in search function to locate posts and images containing Danish terms such as "juice" and "krudt" (gear), "vokseværk" (growing pains), "muskler" (muscles) and "stærk" (strong) and other synonyms commonly associated with this type of trade. Additionally, we noted the use of emojis, particularly those depicting syringes or pills, as symbolic references to the subject matter.

The typical process, was that buyers would comment on sales posts to request a product list, after which sellers would provide the details via private message. Following the identification

of these observational materials, we utilized ManuScrape, a program that serves as a tool to systematically extract the data. In our ManuScrape project, we defined eight parameters to be recorded for each observation: “PLATFORM,” “DATE FOR POST”, “PRICE”, “ANONYMOUS SELLER?”, “OTHER SERVICES IN SALES POST?”, “SELLER OFFERS GUIDANCE?”, “GROUP POST OR CHAT POST?” and “GROUP NAME”. Categorizing our data according to these parameters streamlined the coding and descriptive analysis, enhancing our ability to identify patterns within the dataset, which was exported as a CSV file with all the categorized data.

Interviews within the digital field

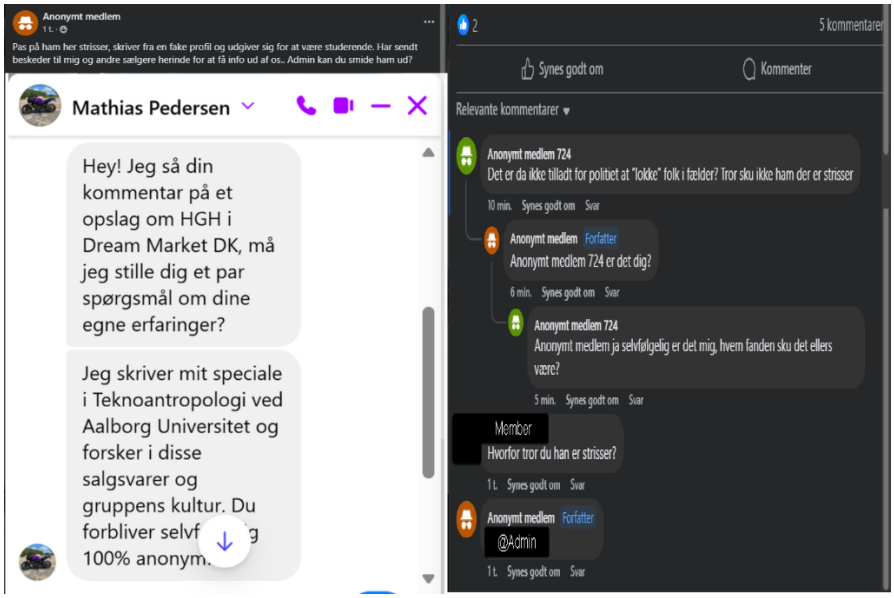
To complement the passive data collection methods, we conducted interviews with members of online PIED communities on Facebook. These interviews represent the sole interactive component of our study (Kozinets, 2020) and were carried out via direct messaging mostly on Facebook, a platform familiar to our participants (Bakken, 2022). A semi-structured interview guide was used to explore how community members perceive and engage with online PIED marketplaces. Furthermore, we compiled a table of all contacted informants, assigning each a unique participant number and linking their interviews to a corresponding observational post-ID from ManuScrape. This systematic approach allowed us to gain deeper insights into the respondents' answers and their broader context. These interviews also function as “member checks” validating the interpretations derived from observation notes and field notes (Kozinets, 2002).

Notably, interviews were not conducted with members of more secure groups, e.g., on Telegram, due to the extensive security measures required. During the interviews, we deliberately adopted a relaxed, conversational approach that mirrored the emic communication style of the online communities. Our interviewers used conversational language and even incorporated emojis, when appropriate, to reflect the natural tone and informality of the participants’ digital interactions. This adaptive style was designed to reduce perceived power imbalances, thereby fostering an environment in which participants felt more comfortable sharing their perspectives on sensitive topics like PIEDs (Kozinets, 2020). However, even in these environments, approaching sellers presented significant challenges. When we contacted a major distributor via

Messenger, despite clearly outlining our research objectives and ethical safeguards, he responded with hostility and threatened to expose our request to the group before ultimately blocking us. This reaction made us reflect upon the deep-rooted scepticism towards outsiders in these spaces, where transactional relationships often take precedence over community engagement. Methodologically, this also made us realise the importance of our flexible and culturally sensitive approaches, and the role of our own presence in the groups.

Dynamics of our own presence

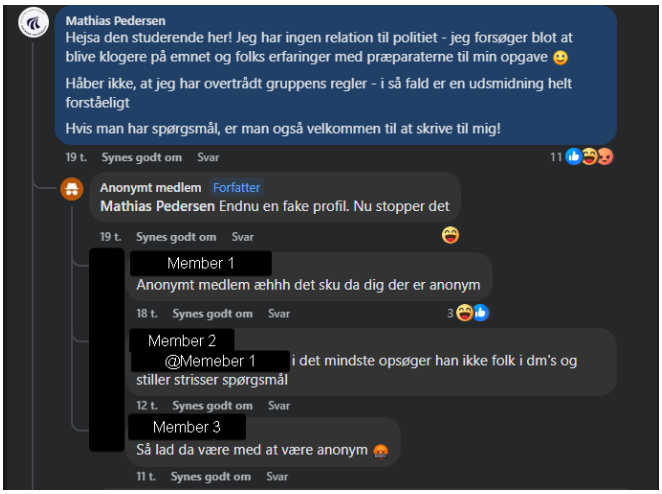
Gaining entry into the closed Facebook groups dedicated to grey-zone transactions and activities, initially presented a few obstacles. Our masked profile was readily accepted, suggesting that membership gatekeeping processes are either relatively lax, or that members primarily rely on surface-level cues, e.g., a seemingly genuine Facebook account, when approving new participants. However, as soon as we approached a buyer privately on Messenger to inquire about their experiences with PIEDs, the dynamics of our presence shifted considerably. A member of the group shared a screenshot of our message in a public post, see screenshot 1, prompting widespread speculation regarding our intentions and identities. This scrutiny revealed an interplay of digital norms, anonymity practices, and suspicion of external surveillance within the community.



Screenshot 1: Public warning post shared by a group member after receiving our message (Appendix 5).

Notably, the member who reposted our private messages, chose to remain anonymous. This behaviour illustrates how anonymity can function as a protective mechanism in these digital environments. By distancing their real identity from any direct confrontation, or potential backlash, the member could alert the group to a perceived threat being the possibility that we were law enforcement, without risking personal repercussions. The discussion in the comments also demonstrates the strong priority members placed on identifying whether we might be "strisser", the Danish slang for police. Interestingly, our status as researchers studying PIED use did not appear to be the main concern, rather, the community's principal fear centered on infiltration by law enforcement. This dynamic highlights how the shared vulnerability of participants in these groups shapes their collective norms, especially regarding the identification of newcomers and fake profiles who could pose a risk.

As Kozinets (2020) notes, netnographic researchers often evolve their roles over time, shifting from relatively passive observation to more engaged forms of participation. In our case, after the post had circulated for about 24 hours, it became apparent that remaining silent could exacerbate distrust. We therefore chose to comment directly on the thread, see screenshot 2, clarifying our status as students rather than police, expressing respect for the group's rules, and inviting any members who could have questions to contact us privately. This way of engaging more openly, constituted a move from a more "lurker" or observational approach toward what Kozinets describes as a "Social Engagement Strategy" (Kozinets 2020, p. 250).



Screenshot 2: Discussion in the comment section amongst members (Appendix 5).

By doing so, we aimed to avoid the "shallow usage" of participation that can be perceived as deceptive, or purely extractive. Instead, our approach sought to foster genuine dialogue. We recognized that our own presence within these groups directly influenced the behaviours and comfort levels of participants. Our methodological strategy therefore evolved according to Kozinets (2020). We ensured that we neither disrupted the natural interactions within the community, and focussed on building open communication with our informants, engaging with them, and exchanging ideas openly over an extended period of time.

Ethical considerations

Determining the level of privacy in online spaces is often challenging (Kozinets 2020). The distinction between public and private online spaces is crucial, because it affects the obtainment of informed consent. Here, we draw upon the differential approach to online ethics advanced by Demant and Moretti (2023), which calls for multiple strategies when deciding on the appropriate method for online data collection. In our study, each online community is continuously evaluated in its specific context. According to the established guidelines of Demant and Moretti (2023), groups are considered closed if they (1) contain fewer than 200 members, (2) require registration, (3) necessitate administrator approval for joining, and (4) set criteria for admission based on relevance.

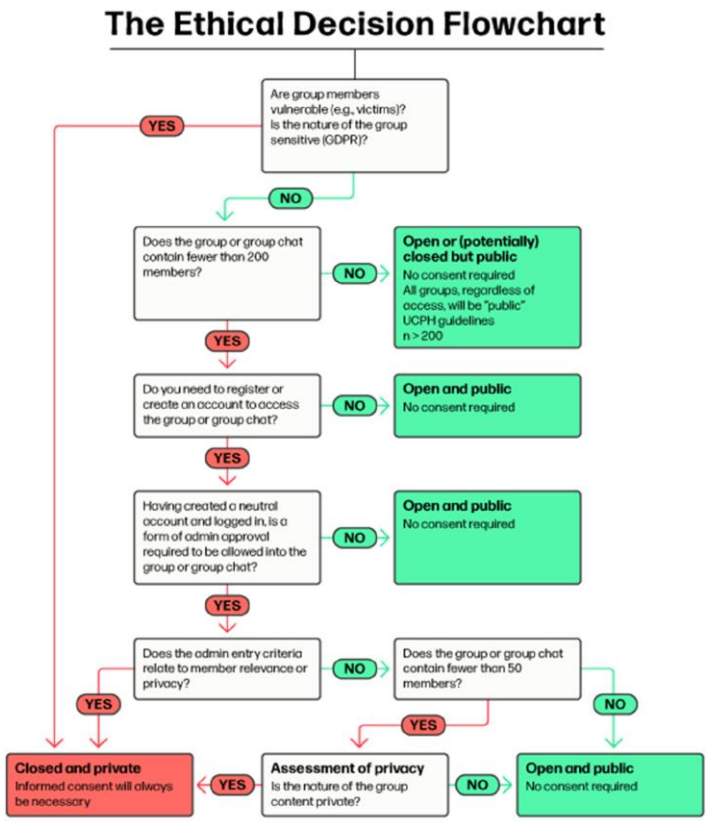


Fig. 2: Ethical flowchart from the University of Copenhagen (Demant & Moretti, 2024) (Appendix 4).

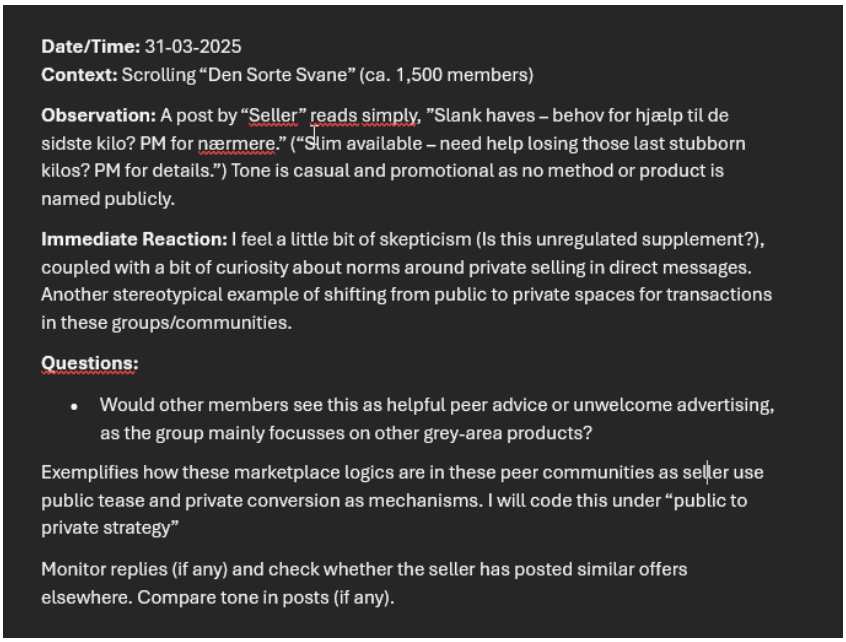
For our project, we visited 60 groups with an average membership count of approximately 3600 members. This substantial membership size indicates that the groups are part of a broader, more public discourse. Consequently, these communities are classified as open, and informed consent was not obtained for our passive observations. However, for our interactive data collection, specifically the interviews, prior informed consent was gathered, consistent with the stricter ethical measures required for active engagement (Kozinets, 2020).

Anonymization and micro-ethics

Given the sensitive nature of researching online discussions related to PIEDs, revealing any information that might identify individuals or groups could have serious repercussions. In line with Barbosa and Milan's (2019) recommendations for online qualitative studies, full anonymization of individual profile names, and other personal identifiers, has been implemented on profiles that is not already masked.

Reflecting further on our micro-ethical stance and our researcher reflexivity as Berger (2015) points out. We have reflected on the preconceived notions we brought to the study about efficacy, risk and the "legitimate" versus "illicit" use of PIEDs. These orientations have potentially shaped every stage of how we analyzed the discourse in these digital communities. As techno-anthropologists, we approached the field with a critical awareness of how these technological systems and biomedical narratives were presented to us. With implicit assumptions about what constitutes "informed usage", "harms" and "expertise" in these digital communities. In engaging with these online spaces where advice, experience and even self-experimentation are negotiated outside formal medical frameworks, we at times became aware of our own interpretive lens. This lens, shaped by both our academic and societal norms, could have an effect on our readings of these communities.

To address this, we integrated reflexivity not only as a personal ethic but also as a formal part of our methodology, which resulted in each observation having their own individual ethnographic note containing our reflections. These ongoing reflexive notes during our data collections, focused on our initial reactions to the content, but also questioning how these responses were shaped by our own positioning, as the example below illustrates:



Date/Time: 31-03-2025
Context: Scrolling "Den Sorte Svane" (ca. 1,500 members)

Observation: A post by "Seller" reads simply, "Slank haves – behov for hjælp til de sidste kilo? PM for nærmere." ("Slim available – need help losing those last stubborn kilos? PM for details.") Tone is casual and promotional as no method or product is named publicly.

Immediate Reaction: I feel a little bit of skepticism (Is this unregulated supplement?), coupled with a bit of curiosity about norms around private selling in direct messages. Another stereotypical example of shifting from public to private spaces for transactions in these groups/communities.

Questions:

- Would other members see this as helpful peer advice or unwelcome advertising, as the group mainly focusses on other grey-area products?

Exemplifies how these marketplace logics are in these peer communities as seller use public tease and private conversion as mechanisms. I will code this under "public to private strategy"

Monitor replies (if any) and check whether the seller has posted similar offers elsewhere. Compare tone in posts (if any).

Fig. 3: Example of reflexive ethnographic note documenting initial observations and reactions to a sales post (Appendix 4).

Therefore these notes helped us notice when we were too detached or too involved in the community's world. In meetings with peers and supervisors, we kept asking ourselves "*are we judging this chat as risky or deviant, or are we letting the community's own rules and meanings shape our view?*". We would argue that this is an important procedure. Berger (2015) also emphasizes that we as researchers must continuously examine and reflect on our own perspectives potentially shaping our interpretation, what she calls "*seeing and not seeing*" in regards to ongoing critical self-reflection (Berger, 2015). We also argue that this is important, as without constant self-reflection, we risk imposing outsider judgments on PIED users' own harm-reduction practices and misrepresenting their lived realities.

Small-N: interviews in a hard-to-reach PIED subculture

Ensuring the validity of our study depends on our ability to generate robust interpretations, through sustained engagement, and collaborative data creation. Extended immersion in online communities, as advised by Kozinets (2002), enabled a detailed understanding of community discourses and practices. In their article, Qualitative Literacy, Small and Colarco (2022) observe that: "*exposure derives directly from the number of hours exposed to the field, and ethnographers generally agree that more time in the field produces better data*" (Small & Calarco, 2022, p. 19). This principle underscores why our extensive hours in the field serve as a valid indicator of ethnographic quality, since cumulative time on site is widely recognized as the primary criterion.

Working within these grey-zone online communities we had a difficult time establishing contact to potential informants. As Harvey et al. (2023) identified three interrelated obstacles when studying hard-to-reach populations, such as PIED users: (1) stigma and illegality that encourage secrecy, (2) gatekeeper influence over researcher access, and (3) modality-specific trade-offs between anonymity and narrative depth. These obstacles underscore that, even when employing multiple interview formats, researchers typically enroll only a few participants. Each format involves compromises, as webchat for instance secures anonymity but yields brief responses, videochat supports rapport but may inhibit disclosure, and audio based chat balances these factors yet omits non-verbal cues (Harvey et al., 2023). Our netnographic fieldwork replicated these dynamics. Consistent with Harvey et al. (2023), we observed that membership in closed groups required gatekeeper approval, and that private messaging was often met with

suspicion. Only participants who were willing to accept exposure to risk through text-only chat agreed to interviews, invitations to speak by voice were declined. Obtaining six text-based interviews within Danish PIED communities thus reflects the small-N recruitment challenges described by Harvey et al. (2023), and confirms that our engagement strategies effectively addressed these barriers.

Following Harvey et al. (2023) guidance, we prioritized text interviews. Our observation protocol, eight coded parameters per post, also secured detailed descriptions of community norms without disrupting interactions, as recommended by Harvey et al. (2023). When engaging directly, we applied their social engagement strategy, including transparent researcher disclosure, adoption of community linguistic practices, including emojis, and respect for participant control over timing and format. Our methodology both reproduces and extends the findings of Harvey et al. (2023) in a new national context. By integrating extensive netnographic data, with an engaged interview component, and by maximizing total field exposure in line with Small and Colarco (2022). We transformed a small-N design into a methodological advantage. The six interviews represent not merely data points, but evidence of significant access and trust, thereby validating our small-N approach and providing a replicable framework for future qualitative research in criminalized online communities.

Disclaimer: Use of AI

In our report, generative artificial intelligence (AI) has been used in a number of ways. We have utilized AI in tasks where we saw that it could mainly save time and would have no meaningful learning outcome. We have used AI, mostly in the form of OpenAI's ChatGPT, in the following tasks: spell checking, proofreading, finding synonyms, translating individual words from Danish to English, generating images for the front page and a minimal amount of sparring on subjects such as sentence construction and wording. This does not mean that we have not engaged in these tasks ourselves, as the use of AI has only been inspirational or, in the case of translation and proofreading, created a more manageable starting point. We would like to underline that AI has in no way whatsoever been used to generate any amount of text, conceptual ideas or analysis in our study or report.

Descriptive Analysis

The dataset empirically collected for this study represents a glimpse of the digital landscape surrounding the topic of PIEDs in Danish online communities. Our data was extracted using ManuScrape with a total of 57 observations, each paired with an individual observational note. Once collected, our data were exported from ManuScrape as a CSV-file, and underwent a cleaning process in Microsoft Excel that ensured inconsistencies were resolved, in regards to establishing a stronger empirical foundation for our study. This allows for a solid overview of our data, which supports our further work in gaining insights of repeating patterns in both posts and netnographic notes (Kozinets 2020:332). Figure 4 shows the final overview of our dataset in Excel, not including the 57 observational notes.

Observation Id	Created At	PLATFORM	DATE FOR POST	ANONYMOUS SELLE	OTHER SERVICES	SELLER OFI	GROUP POST OR CHAT PC	GROUP NAME
4236	2/10/2025	FACEBOOK	2024-08-28	Masked Profile	Yes	Yes	Group Post	BLACKMARKET DANMARK
4445	2/26/2025	FACEBOOK	2024-12-16	Masked Profile	No	No	Chat Post	BLACKMARKET DANMARK
4522	3/4/2025	TELEGRAM	2025-02-14	Private Profile	Yes	No	Group Post	Drømmekroppen
4237	2/10/2025	FACEBOOK	2025-02-10	Masked Profile	Yes	Yes	Group Post	FORTÆL IKKE NABOEN VI ER HER
4592	3/11/2025	FACEBOOK	2025-02-09	Private Profile	Yes	No	Chat Post	Blackmarket dk
4523	3/4/2025	FACEBOOK	2025-01-28	Private Profile	No	No	Chat Post	Blackmarket dk
4447	2/26/2025	FACEBOOK	2025-01-19	Masked Profile	Yes	No	Profile Post	Profile Post
4593	3/11/2025	FACEBOOK	2025-03-02	Anonymous	No	No	Group Post	Dream market DK
5227	3/27/2025	TIKTOK	2025-03-05	Masked Profile	Yes	Yes	Profile Post	Profile Post
4526	3/5/2025	FACEBOOK	2024-07-20	Masked Profile	Yes	No	Profile Post	Profile: Mikkel Mod
4598	3/12/2025	FACEBOOK	2025-03-10	Anonymous	No	Yes	Group Post	Underworld
4248	2/12/2025	FACEBOOK	2025-02-12	Private Profile	No	No	Group Post	Den Sorte Svane
5140	3/26/2025	INSTAGRAM	2025-02-24	Masked Profile	Yes	Yes	Profile Post	Krudteksperten
4253	2/12/2025	FACEBOOK	2025-01-23	Anonymous	No	No	Group Post	Den Sorte Svane
4818	3/20/2025	FACEBOOK	2025-03-14	Masked Profile	No	No	Group Post	Dream Market
4256	2/12/2025	FACEBOOK	2025-01-18	Private Profile	No	No	Group Post	Den Sorte Svane
4473	2/27/2025	FACEBOOK	2025-02-26	Masked Profile	Yes	Yes	Group Post	Black Market
4479	2/27/2025	FACEBOOK	2025-02-26	Anonymous	No	No	Group Post	Black Market
4632	3/13/2025	FACEBOOK	2025-03-12	Private Profile	No	Yes	Group Post	Dream market DK
4482	2/27/2025	FACEBOOK	2025-02-20	Masked Profile	Yes	No	Group Post	Black Market
4634	3/13/2025	FACEBOOK	2024-06-10	Masked Profile	Yes	Yes	Group Post	Jul i BlackMarket Diskret
4769	3/18/2025	FACEBOOK	2025-03-13	Masked Profile	Yes	No	Group Post	Black Market
4483	2/27/2025	FACEBOOK	2025-02-25	Anonymous	No	No	Group Post	Black Market
4484	2/27/2025	FACEBOOK	2025-01-28	Masked Profile	Yes	No	Group Post	Black Market
4770	3/18/2025	FACEBOOK	2025-03-18	Masked Profile	No	No	Profile Post	Profile Post
4485	2/27/2025	FACEBOOK	2025-02-26	Anonymous	No	No	Group Post	Black Market
4486	2/27/2025	FACEBOOK	2025-02-08	Masked Profile	Yes	Yes	Group Post	Underworld
5223	3/27/2025	TIKTOK	2025-02-20	Masked Profile	Yes	Yes	Profile Post	Profile Post
4488	2/27/2025	FACEBOOK	2025-02-09	Private Profile	Yes	Yes	Group Post	Det hemmelige marked 1.0
4489	2/27/2025	FACEBOOK	2025-01-23	Private Profile	Yes	Yes	Group Post	Det hemmelige marked 1.0
4283	2/14/2025	FACEBOOK	2024-10-25	Masked Profile	No	Yes	Group Post	BLACKMARKET SECRETS
4285	2/14/2025	FACEBOOK	2023-12-21	Masked Profile	Yes	No	Profile Post	Profile Post
4235	2/10/2025	FACEBOOK	2025-01-03	Masked Profile	Yes	No	Chat Post	BLACKMARKET DANMARK
4286	2/14/2025	FACEBOOK	2024-08-09	Masked Profile	Yes	No	Group Post	Gang i gaden
4569	3/7/2025	FACEBOOK	2025-02-19	Anonymous	Yes	No	Group Post	Black Market
4570	3/7/2025	FACEBOOK	2025-03-06	Private Profile	No	No	Group Post	Black Market
4288	2/14/2025	FACEBOOK	2023-12-25	Masked Profile	Yes	No	Group Post	BLACKMARKET SECRETS
4571	3/7/2025	FACEBOOK	2025-02-25	Masked Profile	No	No	Group Post	Dream Market DK
4290	2/14/2025	FACEBOOK	2023-12-18	Masked Profile	No	No	Group Post	BLACKMARKET SECRETS
4291	2/14/2025	FACEBOOK	2025-02-12	Masked Profile	Yes	Yes	Group Post	Det hemmelige marked 1.0
4438	2/25/2025	FACEBOOK	2025-02-20	Anonymous	No	No	Group Post	Dream market DK
4292	2/14/2025	FACEBOOK	2024-11-01	Masked Profile	Yes	No	Group Post	Jul I BlackMarket Diskret 1
4293	2/14/2025	FACEBOOK	2024-09-07	Masked Profile	Yes	No	Group Post	Blackmarket
4294	2/14/2025	FACEBOOK	2024-10-18	Anonymous	Yes	No	Group Post	Jul I BlackMarket Diskret
4836	3/20/2025	FACEBOOK	2025-03-18	Private Profile	No	No	Profile Post	Profile Post
4259	2/12/2025	FACEBOOK	2024-12-25	Anonymous	Yes	No	Group Post	Den Sorte Svane
4579	3/10/2025	FACEBOOK	2025-02-21	Anonymous	Yes	No	Group Post	Dream market DK
4580	3/10/2025	FACEBOOK	2025-03-10	Masked Profile	Yes	No	Group Post	Den Sorte Svane
4590	3/11/2025	FACEBOOK	2025-02-10	Masked Profile	Yes	No	Chat Post	Dream market DK
4887	3/20/2025	FACEBOOK	2025-03-20	Private Profile	No	No	Group Post	Black Market
4591	3/11/2025	FACEBOOK	2025-03-11	Masked Profile	Yes	Yes	Chat Post	Blackmarket dk
5417	3/31/2025	FACEBOOK	2025-03-10	Masked Profile	Yes	No	Group Post	Lillebror 2
5418	3/31/2025	FACEBOOK	2025-03-30	Masked Profile	No	Yes	Group Post	Den Sorte Svane
5419	3/31/2025	FACEBOOK	2025-03-30	Masked Profile	No	No	Chat Post	Blackmarket dk
5420	3/31/2025	FACEBOOK	2025-03-21	Private Profile	No	Yes	Group Post	Lillebror 2
5495	4/2/2025	TIKTOK	2025-02-24	Masked Profile	Yes	Yes	Profile Post	Krudteksperten

Fig. 4: Overview of our exported dataset in Excel (Appendix 4).

Each online post in relation to PIEDs that are captured in the dataset, is attributed to specific social media platforms, most notably Facebook, which dominates the dataset with approximately 91.1% of the observed posts. Other platforms such as TikTok, Instagram, and Telegram appear only marginally in the data. The distribution in our data is visually underscored in Figure 5, which shows platform prevalence. As Facebook makes up the majority of observations, this platform plays a central role in our study, when it comes to both the dissemination of PIED-related content and the facilitation of community interactions. It should be noted that we do not have enough comparative data, to confidently state that Facebook is the social media platform with the largest number of PIED-related communities and posts. Nonetheless, this finding invites further comparative analyses across platforms, to fully capture the diverse dynamics of PIED-related communities.

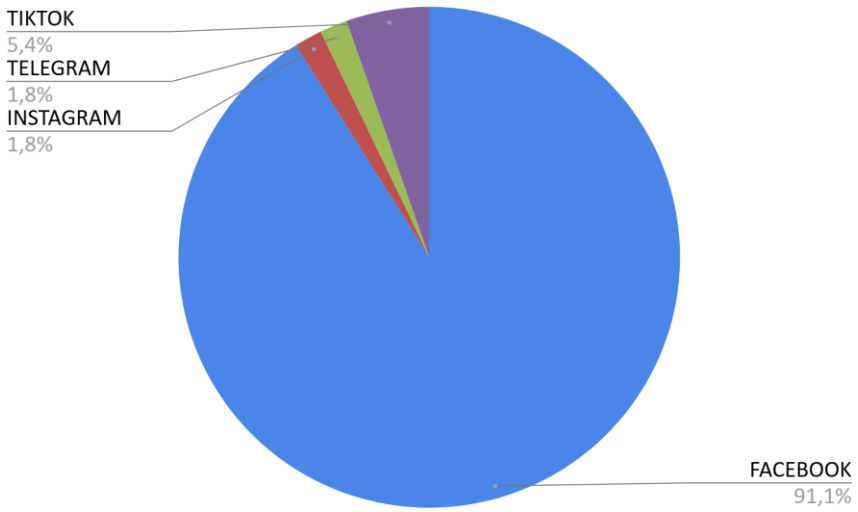


Fig. 5: Diagram to highlight Facebook's dominance as our empirical platform in our dataset (Appendix 4).

Further examination of our data reveals a significant variation in how sellers choose to present themselves, and interact with potential buyers, within the communities. The chart "Seller Type and If They Offer Guidance", is central to our descriptive analysis of the online PIED communities, in regards to also serving as a marketplace. It categorizes sellers into fully anonymous, masked, and private profile types, while highlighting whether they provide usage guidance in their sales posts. Notably, masked profile sellers dominate our dataset and are more likely to

offer guidance, suggesting that they carefully balance anonymity with the need to build credibility and trust among buyers. Furthermore, this proactive behaviour could also indicate that these sellers are not only strategically managing their identities, but are also operating with a high degree of professionalism. Fully anonymous sellers rarely provide guidance, likely reflecting a conscious strategy to minimize exposure within the groups and communities, while also avoiding using accountability or "coaching" as a sales strategy. The private profile sellers, though less common, also tend to offer advice, indicating that a higher degree of personal visibility could foster trust and accountability. Figure 6 underscores the reciprocity between anonymity, and the dissemination of advisory content, revealing how seller identity management is a balancing act of creating personal connections. This fosters the feeling of community, while mitigating the risk of prosecution.

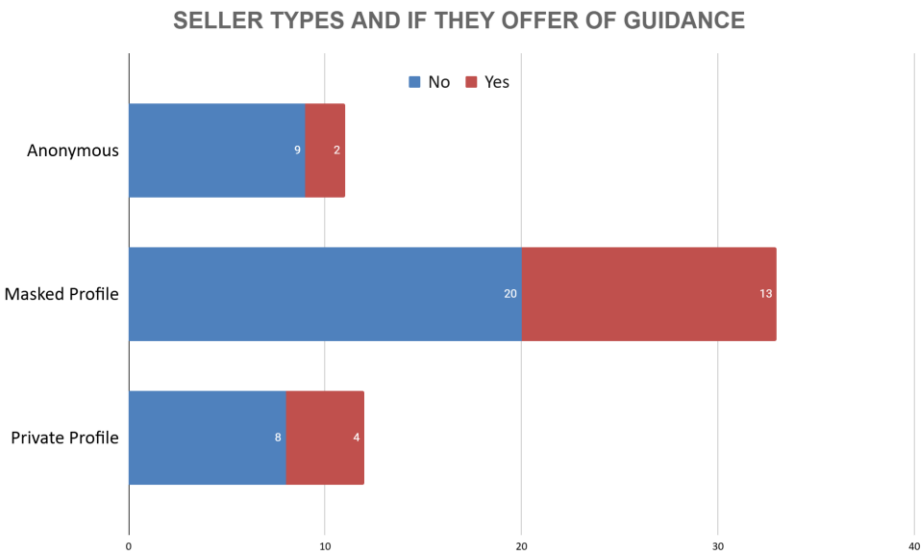


Fig. 6: Diagram illustrating the data for the seller types and guidance (Appendix 4).

In addition to seller identity, the dataset also includes detailed information regarding the format in which PIED-related content is presented. The parameter "Group Post or Chat Post" distinguishes between group-based interactions, one-on-one or small group-based community chats, and individual profile posts. Figure 7 clearly illustrates the predominance of group posts, indicating the importance of communal interactions within this field.

Group posts not only facilitate large-scale exchanges of advisory content but also contribute to the normalization of PIED usage by presenting a sense of collective endorsement. This can especially be seen as the open discussion on PIEDs and the sheer amount of content surrounding it, lends a feeling of normalcy to the topic in these online communities. In contrast, chat posts, while fewer in number, reflect a more private mode of interaction, in a format as seen on encrypted platforms like Telegram and Signal. Individual profile posts typically by sellers using their masked profiles, who have obtained a community of users as their friends on their profile, being the least frequent. This further emphasizes that most PIED-related discourse is conducted in settings where group dynamics and personal recommendations play a vital role.

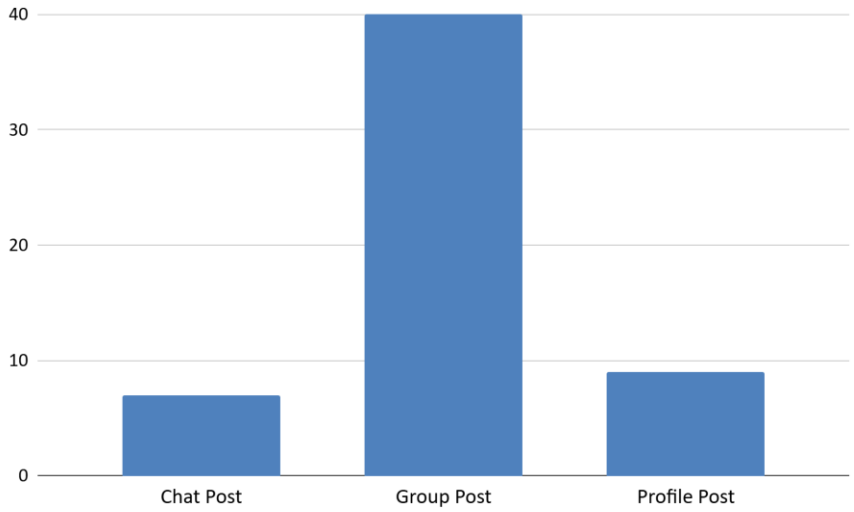


Fig. 7: A bar chart over the amount of chat, group and profile posts present in our data (Appendix 4).

To sum up, our analysis shows that Facebook overwhelmingly dominates our dataset giving a glimpse into the Danish PIED online landscape. This is primarily driven by its group-based interactions that encourage communal support and information exchange. Our dataset further reveals that we mostly collected posts on sellers strategically balancing anonymity with credibility, most notably, masked profile sellers who operate with distinct professionalism. This could indicate that there is an interplay between digital identity management, and trust-building, going on in these communities.

Theoretical framework

To understand the relationship between technology and human behaviour, we draw on multiple theoretical frameworks. First, we operationalize the theory of symbolic interactionism to gain deeper insight into how participants in these communities ascribe meaning to actions, artefacts, and platform functions. Symbolic interactionism plays a crucial role in our understanding of the field, as it enables us to structure our understanding of interlinking communities and their boundaries. We then explore the concept of affordances, in the context of social media platforms. Building on James Gibson's (1977) original formulation, we examine how this concept can be adapted to our study. Specifically, we use it to investigate which technical features of social media platforms enable and support the illicit sale of PIEDs, as well as the dissemination of related information. Together, these frameworks allow us to analyse how these communities function, how they operate, why they exist, and which features define their structure and practices. In the following section, we elaborate on these theoretical perspectives, and outline how they inform our analysis

Symbolic interactionism

The following section will focus on explaining the theoretical underpinnings of symbolic interactionism as elaborated in Science-Technology-Studies (STS). Drawing primarily on the insights provided by Bossen and Lauritsen in Chapter 6 of "*Introduktion til STS*" (2007), the section focuses on key concepts, namely "social worlds", "work", "articulation" and "boundary objects". We focus on examining their relevance for understanding how meaning and order are co-constructed within digital environments.

Symbolic interactionism is deeply rooted in American pragmatism. A tradition championed by authors such as William James and John Dewey, that emphasises the centrality of practical experience, and practice in shaping reality. The foundation of American pragmatism can be summed up by D.S.- and W.I. Thomas' theorem of: "*If men define situations as real, they are real in their consequences*" (Bossen & Lauritsen, 2007, p. 140). The theorem defines the prioritization of practical experience, as it points the focus of inquiry towards what is experienced by the given actors. Bossen and Lauritsen (2007, pp. 139-140) underscore that this intellectual tradition was re-articulated to fit the field of sociology by George Herbert Mead, who posited

that the ability of individuals to reflect on and defer immediate reactions is pivotal for the development of a self and, by extension, social order. Herbert Blumer's formal introduction of the term "symbolic interactionism" in 1937 framed these ideas, setting the stage for a research program where meaning emerges through interactions and is continuously negotiated in everyday life (Blumer, 1937, p. 153).

The framework used in our study integrates several concepts that are relevant to understanding the dynamics of online communities. Bossen and Lauritsen (2007, pp. 141-143) demonstrate that within digital settings, discrete *social worlds* form as relatively stable, yet dynamically evolving, groups of actors. These social worlds are characterized by shared norms, values, and practices that are continuously negotiated and renegotiated. In online environments the notion of social worlds is particularly notable, as it highlights the instability inherent in digital interactions and the capacity of participants to reconfigure their collective identities in response to emerging challenges. A central aspect of the theoretical framework is the recognition that social action is sustained by both visible and invisible forms of work. Within the theoretical framework of symbolic interactionism, one of the arguments is that while plain actions, in our case such as posts and transactions in online marketplaces, are easily observable some forms of other action are not. There exists an equally important, though often unacknowledged part of action, so-called invisible work (Bossen & Lauritsen, 2007, p. 142). This includes the subtle coordination, mediation, and background processes that happen behind the transactions, that ensures the smooth functioning of community practices within the groups. Bossen and Lauritsen (2007) present the example of Adele Clarkes work in reproductive studies. Here she researched the process of extracting hormones active in reproduction from pregnant cows. While the visible work in this context was the "scientific" work of extracting and refining the hormones, the work of extracting the urine from the cows, and taking care of them was equally essential to the study. This work traditionally evaded the classification of "scientific" work, and by far became invisible to much of society. The emphasis on invisible labour challenges conventional conceptions of work and underscores the multifaceted nature of effort necessary to maintain social order, thereby extending the traditional boundaries of symbolic interactionism (Bossen & Lauritsen, 2007).

Here we would also like to present the theoretical concept of the frontstage and backstage, as defined by Erving Goffman. In the context of a social world with dynamic identities, this concept helps us understand how people present themselves, and where these negotiations of identity take place (Goffman, 1959, p. 112). The concept pertains to the idea that people act in different ways in different contexts. Goffman divides these contexts into the frontstage and backstage. The frontstage is seen as the public space, where you might be observed and therefore adhere to whatever rules, norms, and values have been set in the specific social world or community. The backstage refers to places in which you are not directly observed by others, a place where you can drop the "*act*" of adhering to specific norms and practices (Goffman, 1959, p. 112). We aim to utilize this theoretical concept to show that the negotiation of practices, meaning, and values does not always happen in publicly accessible arenas but is simply most visible there. This also allows for a conceptualization of where negotiations and work take place in our social world.

When actors continuously interact with others and the world, they are also in negotiation on where and how they belong. Actors are involved in a process where they seek to align themselves with other actors, in the process of ascribing meaning to- and interpretation of the world. These processes are referred to as *articulation processes*, in which actors agree on the goals of the community, ascribe roles in their social world and agree upon which resources and artefacts are valued (Bossen & Lauritsen, 2007, pp. 143-144). One of the ways we look at the articulation process, is through what we refer to as discursive frames, which entails the repeated sentiments that are shared between members of a social world, to define the previously explained components. Elements such as norms, everyday practices, and technological engagements are linked to form coherent patterns of interaction which are the results of articulation processes. With the concept of articulation, we wish to examine whether social worlds, as presented by symbolic interactionism, exist in our field. It is entirely possible that these groups are made up of people randomly interacting to achieve the same goal, but with no social order, such as people waiting at a bus stop. But through our fieldwork, we have encountered several interactions that point towards the creation of a structured social world. For this purpose, the concept of articulation serves the function of structuring the way we examine the social make-up of these groups. This ongoing process stems from the dynamic nature of social order. Here articulation processes never become static, but remains a flexible and adaptive construct, reflective of the dynamic interplay among community members.

Further, the concept of *boundary objects*, as discussed in the chapter by Bossen and Lauritsen (Bossen & Lauritsen, 2007, pp. 144-146), plays an important role in mediating interactions across diverse social worlds. These objects, which may take the form of digital tools, artifacts, or conceptual frameworks, serve as mediators that enable actors from different social worlds to communicate and collaborate despite having differing local practices. The authors draw on the work of Susan Leigh Star and James R. Griesemer to illustrate how boundary objects facilitate coordination, without necessitating complete uniformity of practices across groups. The subsequent refinement of this concept, into what Joan Fujimura terms standardized packages, provides an even more nuanced view. These mediating objects not only bridge differences but also stabilize interactions through the imposition of standardized methods and protocols (Bossen & Lauritsen, 2007). We posit that boundary objects will be present in our field, in the sense that certain features of social media sites enable different social worlds and communities to interact, both intentionally and unintentionally. For example, the function of closed groups that intentionally support different types of illicit markets, creates a situation where the social world of PIEDs, and stolen goods markets interact. This claim will be elaborated on and explicated further in our analysis.

In applying these theoretical constructs to the analysis of online markets and communities, it becomes important that these digital arenas are more than just platforms for economic exchange. They are entangled sites of social negotiation. The formation of distinct social worlds, within digital contexts, underscores the fact that the construction of community identity and order is an ongoing, negotiated process. The labour involved in facilitating these processes, both visible and invisible, plays a crucial role in the maintenance of social structures. The process of articulation enables participants to continuously realign their practices in response to internal and external pressures. Thereby ensuring that the shared order remains robust, yet adaptable. Moreover, boundary objects, and their stabilization into standardized packages, demonstrate how heterogeneous groups can achieve effective collaboration, even as they retain distinct local identities. By integrating the central concepts of social worlds, work, both visible and invisible, articulation processes, and boundary objects, this framework accounts for the dynamic and negotiated nature of our studied online communities.

Affordances

When further understanding the interplay between technology and human behaviour, it is essential to supplement our theoretical framework with an examination of the concept of affordance. Originally introduced by Gibson (1977), affordances refer to the inherent possibilities for action that an environment offers its users, which proves particularly relevant when applied to a digital context (Bucher & Helmond, 2018). While Gibson developed the concept of affordance in the field of ecological psychology, the theory has later been adopted by several STS approaches and broadly refers to the study of what material artefacts allow people to do in a specific environment. Affordance has especially become an important topic in technology and media studies, when tracing development in user behaviour and activities (Bucher & Helmond, 2018). In digital platforms, these affordances are not abstract potentials, but are embedded within the design features, such as intuitive navigation systems, interactive icons, and responsive interfacest. These actively signal to users which actions are possible. Design elements shape user interactions and, in doing so, help catalyze the emergence of new behaviours and community practices that are increasingly characteristic of online subcultures.

By applying the framework of affordance, we aim to gain additional explanatory power to understand how digital structures not only mediate interactions but also enable and constrain specific forms of behaviour. We argue that this perspective becomes important when analyzing the formation of online communities. It highlights how features built into the technology itself contribute to the dissemination of information, and the normalization of practices, including the buying, selling and use of PIEDs in these communities. In this way, the affordance framework complements our earlier presentation of symbolic interactionism and STS, by emphasizing the material factors that influence social interactions in digital environments.

For our context, we utilize the conceptualization of technological affordances by William Gaver. Technological affordances are defined by the focus on how "*social activities are embedded in and shaped by the material environment*" (Bucher & Helmond, 2018). In this version of affordances, material qualities of technology, which we understand as encompassing features on digital platforms, are viewed as partly constitutive of social interactions. Therefore, affordances are not merely material features of an environment, from which individuals can act, they also enable social interaction and play a vital part in constituting communities. In the

context of social media and digital platforms, technological affordances also support the view that social media sites both present affordances and constraints (Bucher & Helmond, 2018).

We argue that Hutchby's Technologies, Texts and Affordances (2001) offers an essential complementary perspective that deepens our understanding of how these digital environments not only mediate interactions but actively shape them. Hutchby challenges a static view of technological features by arguing that affordances emerge through a dynamic interaction between the material properties of digital platforms and the interpretive practices of their users (Hutchby, 2001). In other words, technologies are not simply passive tools. They are "texts" that communicate possibilities for action while simultaneously being inscribed with cultural norms, and expectations that inform user behaviour. This theoretical viewpoint is particularly relevant for our project on online marketplaces and PIED communities. Here, the design of digital systems, ranging from interactive interfaces to navigational cues, creates specific affordances that structure user engagement. For instance, the affordances embedded in these platforms guide practices such as content posting, transactions, and even the subtle coordination of invisible work. Reinforcing and reshaping the social world we discussed within the framework of symbolic interactionism. Hutchby's theoretical framework helps us understand that these affordances are not inherently present in the technology alone, but they are co-constructed through user interaction, and continuously reinterpreted as digital cultures evolve (Hutchby, 2001).

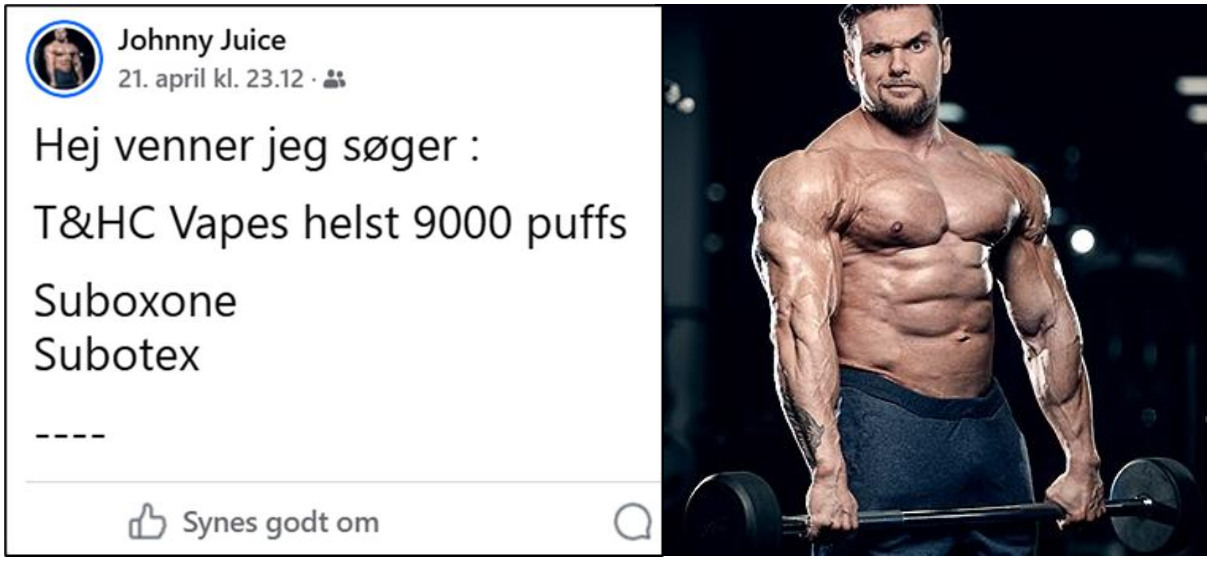
Analysis: Making sense of Denmark's online PIED markets

In the following section, we will dive into our analysis of the Danish PIED communities. The analysis will focus on several aspects of the PIED communities. Still, as it is framed by our theoretical framework of symbolic interactionism and affordances, we will pay special attention to what can be understood through this lens. Our analysis is therefore not one that seeks to issue any moral judgement, or in general give our opinion on whether the practices of this community are harmful. Neither is this a criminological or psychological analysis that wants to explain direct criminal behaviour. The aim of our analysis will be to understand a community, and to some extent a phenomenon, that has not yet been described in a Danish context.

To accomplish this, we will look at several aspects of what we see as constituting a social world in the context of symbolic interactionism. It should be said that while affordances, as a concept, mostly will be activated in the last part of the analysis, it has been an invaluable tool for us to understand the field. First, we look at the actors of the social world, their functions and presence. This naturally leads us to look at the values and meanings that are ascribed to certain artefacts and actions. Through this part, we pay special attention to the language and communication in the social world. Then we move to look at the discursive frames of the social world, and in turn, the articulation processes that take place within. To round off our analysis, we explicate the affordances of Facebook as a platform that harbours these groups. We also highlighting how these affordances work as a boundary object that enables multiple illicit markets to cooperate. At the end of each section, a short summary will highlight its main analytical points.

The social Ecosystem of Buyers, Sellers, and Experts: Diverging Roles and Perspectives

When we first entered the field, we had expected to encounter a somewhat simple structure in these groups, similar to any other market that simply consists of buyers and sellers. While that in some cases still holds true, it is by far not an accurate descriptio. We, of course, still see different types of buyers and sellers, but in between these, there are also different compositions of actors. For example, the major distributor, Johnny Juice, does not only sell PIEDs, but is also actively involved in buying other goods. In screenshot 3, you can see an example of these tendencies, where Johnny Juice posts about looking for THC vapes and Suboxone/Subotex.



Screenshot 3: Post from major distributor Johnny Juice and the profile picture of the masked profile (Appendix 5).

The screenshot also exemplifies the relationship between PIED markets and other markets containing illegal goods, which we will touch upon later. This example is one of many that illustrates how the role of seller and buyer, shifts and bends. We have identified 4 main groups of actors in the social world of PIEDs which are as follows: *Sellers, buyers, advisors and admins*. All these actors can be defined by their main function in the social world, but they are not without their sub-categories.

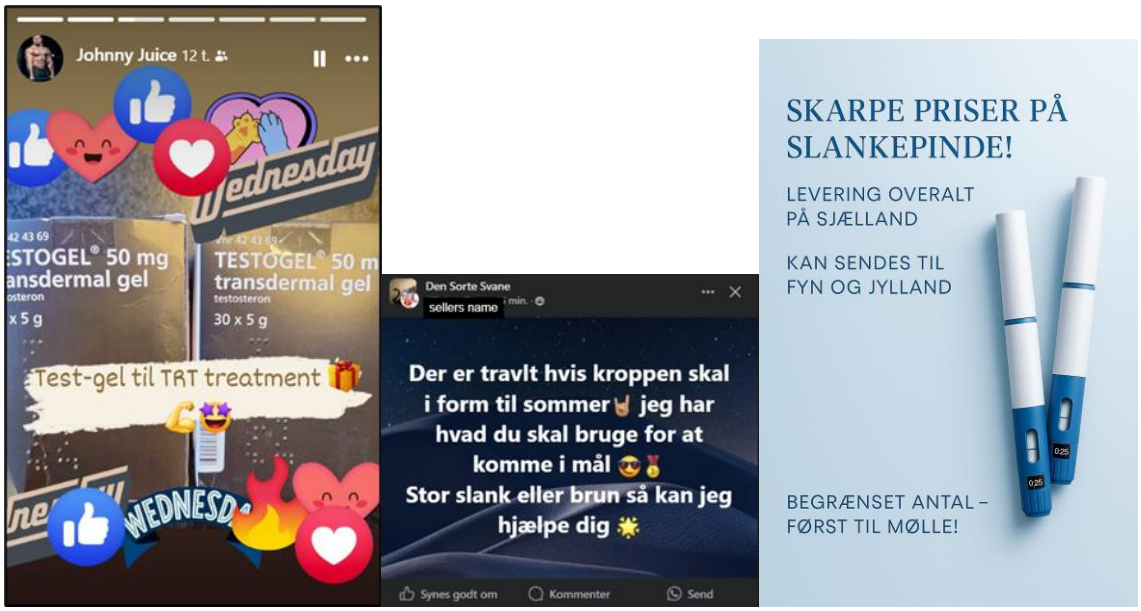
Sellers: Between the organized and opportunistic

In our descriptive analysis, we defined sellers by one of three categories: private-, masked- or anonymous profiles. For the purpose of structuring data, these three categories serve their purpose well, but are not sufficient in describing all types of sellers. We have encountered three main types of sellers that we refer to as: *Major distributors, diverse distributors and opportunistic sellers*.

The seller we have referred to several times by now, Johnny Juice, is a typical example of a major distributor. The moniker "Johnny Juice" is of course a masked profile, which both offers a degree of anonymity but also serves as a way of building a personal relationship to buyers and group admins. The vast majority of major distributors utilize masked profiles, but some even do it through their private profiles. These are seldom but still exist, as do major distributors operating from completely anonymous profiles. Major distributors therefore manage their identity, as they balance between the need for anonymity, while still being able to build credibility and trust. This type of seller bases a large part of their buyer base on personal relationships, where a type of buyer we refer to as a "promoter", which we will describe later, plays a large role in legitimizing the seller to other buyers. In screenshot 4 we show an example of a major distributor utilizing the affordance of masked profiles. This is often combined with Facebook's own badge of being a "major contributor" within the groups, which frames them as both trustworthy and sympathetic.

Screenshot 4: Major distributor engaging with buyer in regards to "*goodwill*" (Appendix 5).

In the example above, we see a buyer complaining that she was scammed by another seller, to which the major distributor CN responds by offering them a dose of weight loss medication at a discount. Here the seller both puts themselves in a position where they seem more legitimate than the alleged scammer, they increase the perception of their professionality, while also appearing sympathetic by stating that they are doing it as "*goodwill*" and to "*support*" the buyer. What also becomes apparent here and contributes to our understanding of these markets as a social world, is that the major distributors are defining the values and norms of the social world by being a sort of "*role model*" that exemplifies how you should act in these markets. Major distributors also play an important role in the social world of PIEDs, as they impact the articulation processes that define it. What is also characteristic of major distributors, is their approach to selling PIEDs, which resembles legitimate businesses. This especially becomes apparent when looking at how they promote themselves on their own pages and in groups. What can be seen in screenshot 5, is promotional material from three different major distributors.



Screenshot 5: Major distributors resembling legitimate businesses (Appendix 5).

These promotions resemble what can be found on regular small business pages, in elements such as language, emojis and tonality. What can be said to define and set apart major distributors from other sellers, is the combination of these elements which results in a seller's distinct brand. A short accurate description of major distributors would be that they are specialized sellers dealing only in PIEDs, who gain trust and confidentiality through personal connections. Besides securing their own base for dealing in these markets, major distributors also have a

defining effect on the social world of PIEDs. They are defining in the constitution of practices, values and norms. Major distributors take up a large share of the market, but do not in any sense have a monopoly on the trade, but they do stand out in their commitment to exclusively deal in PIEDs. Another type of seller we have identified in these groups is the *diverse distributor*. This type of seller sometimes commits to the same marketing scheme as major distributors but are not specific in what products they sell. These sellers supply their customers with everything from PIEDs to hard drugs and stolen goods.

Observation 4526: Example of sales posts with a variety of products from a diverse distributor (Appendix 2).

In observation 4526, a list of available products from a diverse distributor is seen. Here both PIEDs, benzodiazepines, opioids and sleeping medication are available, showing the diversification of products from major distributors. While some of these sellers mimic major distributors in style, a larger majority of these sellers have a higher degree of anonymity. This could point to the fact that diverse distributors do not rely on personal relationships as much as major distributors. What also becomes apparent here is the difference between sellers who deal in prescription medication that is traditionally classified as narcotics, as opposed to medication that falls under the Danish Medicines Act.

Generally, we have seen that people who deal in what most consider narcotics, use these groups as a way of moving customers onto other platforms that provide a perceived sense of better

anonymity and encryption. Diverse distributors, who deal in both PIEDs and other substances, are therefore more likely to engage in trade that is both impersonal and guided by the higher need for anonymity. The attentiveness to anonymity shows that diverse distributors are very aware of the more severe penalty connected to dealing in narcotics over PIEDs and therefore prioritize anonymity over the possibility of building a personal relationship to both buyers and the wider community. This is also indicative that most people who use PIEDs and engage in the surrounding social world, are aware of the more relaxed legal framework. They use this as a foundation for a more open and community-based approach to PIED sales and dissemination of advisory content. As some diverse distributors are averse to engaging in personal relationships with buyers, they also have less of an impact on the entire community, again highlighting that major distributor, being more specialized in what products they sell and more attentive to the community play a defining role for the social world.

The last category of sellers we have defined are the *opportunistic sellers*; these are a minority of what we have encountered but are still present and play a role in the social world. What defines opportunistic sellers is that they are often one-and-done sellers. Most of these sellers we have only encountered once, and they seem to be somewhat spontaneous. These sellers are not looking to create a customer base, or continuously sell PIEDs, such as the major og diverse distributor. Instead, it would seem these sellers have somehow come into possession of a random quantity of PIEDs and want to sell them. Our perception of this is that opportunistic sellers come by PIEDs either by chance, having access to prescriptions they do not need or stealing. Therefore, this type of seller often only deals in singular products and low quantities. On the spectrum of anonymity, opportunistic sellers place themselves in the extremes, being either completely anonymous or using their private profiles, alluding to the fact that they are not professional, and that they therefore have no standard procedures surrounding these sales. Observation 4485, shows a standard sales post from an opportunistic seller:

Observation 4485: Example of a typical anonymous sales post from an opportunistic seller (Appendix 2).

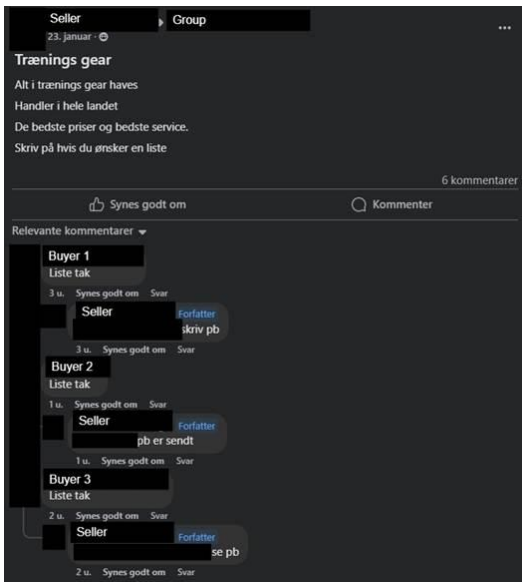
In the post you can see characteristics, such as the seller posting the price, not informing about shipment or payment possibilities, neither answering comments, and only offering a limited amount of one type of PIED. Due to the spontaneous and sporadic nature of opportunistic sellers, their constituting effect on the social world is limited. Even then they still enforce the values and meanings other actors have defined in the group. For example, opportunistic sellers regularly post pictures of their products, which sellers of other illegal products would refrain from, showing that opportunistic sellers adhere to the belief that they are less likely to be prosecuted. They also utilize affordances such as anonymity features. In cases where they utilize their private profiles, they rely on the confidentiality of the group, two practices that play a large role in the social world of PIEDs.

While these definitions are specific to some sellers, others might drift between one and another. Mostly we see that major- and diverse distributors stay in their category, but in some cases, they might drift to other forums and enter into the markets of other types of products. This is emblematic of the nature of these forums, where a melting pot of different markets meets under the shared affordances of closed Facebook groups, that allow them both to reach a larger customer base and evade legal prosecution.

All different types of sellers play a role in the constitution of the social world. These sellers not only have a stake in, but also the ability to shape the social world of PIEDs. One of the ways sellers are involved in constructing and stabilizing the social world, is by continuously ascribing meaning to their actions and artefacts. As we have previously touched upon, major distributors have the largest constituting effect of any actor. They have the ability to change the discursive frames of the markets, and their work within them, shaping the values of the entire social world. Diverse distributors are somewhat equal to major distributors in this sense, but rely less on product specific rhetoric, and therefore play a lesser role in directly affecting the core understanding of PIEDs within the social world. Opportunistic sellers play a much less impactful role than other types of sellers, as their constituting power lies mostly in the enforcement of already negotiated attributes of the social world.

Buyers: The glue of the social world

Markets of course need to consist of two sides, a provider and a receiver, one of which we have not touched upon yet. Sellers, in our context, are quite open to categorisation, as they are required to operate in view of all members of the groups they exist in. In this case buyers differ. One foundational practice in these groups is that as much communication as possible is to happen in confidentiality. This happens either on the same platform they had their first contact, or one such as Telegram, that offers better encryption.



Observation 4489: Example of a typical procedure of customers asking for a product list in a private message (Appendix 2).

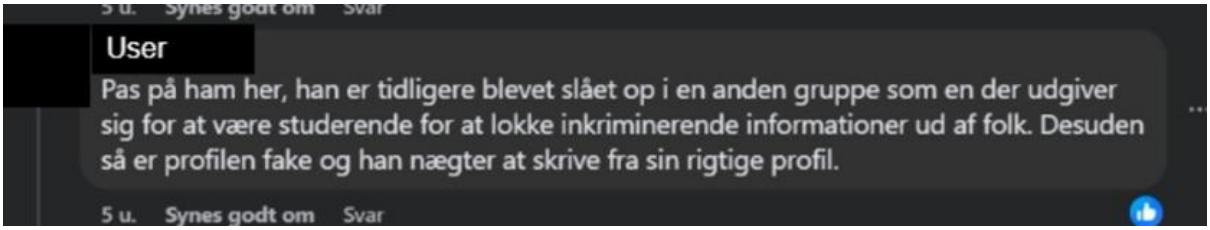
In observation 4489, we see a standard operating procedure (SOP), when purchasing PIEDs. The seller, in this case a majority distributor, states that he has a list of "training gear" which can be shipped all around the country. In this case the slang word "gear" is used to specify that the seller means PIEDs and not training equipment, as in that case they would have used the Danish word "udstyr". In the last line we see the most common SOP in the social world, where the seller writes "write if you want a list", to which multiple buyers respond. The point here is twofold. The first is, that the social world has developed a SOP based on the belief that it is easier to evade detection in the private chat function of Facebook, than it is in closed groups. This is a reliance on a perceived affordance, where in reality Meta monitors both chat and closed groups with algorithmic detection (Gorwa et al., 2020). The second point is, that a majority of buyer activity happens in forums we cannot access. What we most commonly see from buyers are elicitation posts, where they state what they are looking for and thereafter quickly move to closed forums, or comments such as these that simply say, "send DM". Therefore, we have opted to not categorise the buyers as we have the sellers. Instead, we found it more practical, to highlight the two specific ways users shape the social world, which is: *Promotion* and *vigilantism*.

The most important way that users affect the social world is by referring sellers, especially major distributors. This perpetuates several values such as trust and care but also highlights major distributor role as central in the social world. In observation 4570 and 4632, we see two buyers promoting major distributors:

Observation 4570 & 4632: Example of how buyers promote major distributors in the groups (Appendix 2).

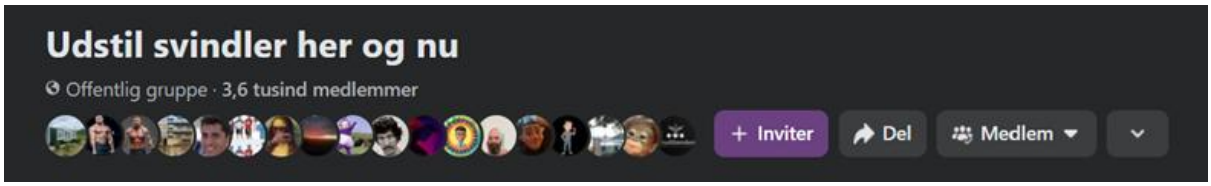
In observation 4570 a very simple interaction takes place. A buyer states what he is looking for, and another buyer (faulty labelled "Seller 1"), refers them to seller 2, a well-known majority distributor. In observation 4632, the same interaction happens, albeit more complex. The buyer (labelled as "User") refers the poster to a majority distributor labelled Seller 1, but also adds to their promotion, that Seller 1 is "*Skilled and good at guiding you through the first cycle. I highly recommend*". By promoting certain sellers, most users gain nothing in doing so, but it strengthens the reliance on trust in the social world. We have confirmed this with a major distributor (see interview 6). What we see in these statements, is how buyers help to support practices set forth by sellers and admins of these groups. Some of these groups are based on in-person referrals, often asking "*who do you know in this group?"* as a part of the application process to the group.

We see that this is continued when it comes to trading, often encountering questions of "*has anyone done business with XXX before?*". These two observations show that users play an active role in perpetuating these practices in the groups. As they often are the ones who create trust between sellers and buyers who are not familiar. The function of giving your stamp of approval is one of the buyer's most important roles in the social world, and shows that they are not the determining factor in creating practices, but instead enforce them by perpetuating already negotiated values, rules and practices. Personal referrals and meeting new buyers/sellers through acquaintances or word of mouth, can be seen as a somewhat vestigial function from the days where PIEDs were mostly traded through relationships in fitness or gym communities. While this has its role in evading legal prosecution, this could almost entirely be substituted with the affordances of anonymity on different social media platforms. At the same time, this also shows major distributors' reliance on interpersonal relationships as a way of establishing their trustworthiness and authority in the social world. In the ecosystem of the social world, users also play a maintaining role when it comes to trust. This is expressed as a form of vigilantism, where users actively expose people who might defraud others, and check their validity. We experienced this first hand at our entry into the field, where several users had us pegged as being part of the police, or otherwise trying to entrap them. This can be seen in screenshot 1, but we also experienced it later as we posted to one of the groups trying to engage with the users:

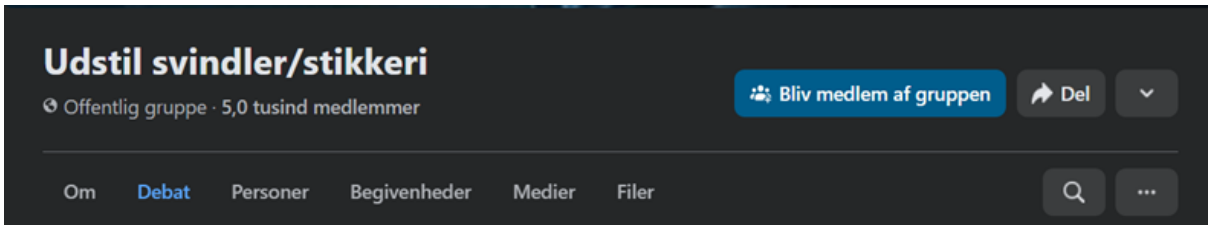


Screenshot 6: User warning others in the comments of our post (Appendix 5).

As we were having difficulties in engaging users of these groups, as described in previous sections, we opted to post to three different groups where we called for willing participants to contact us. As a response to this post, we received no further engagement besides the comment above. What we see in Screenshot 6, is a user who claims we are engaged in entrapment, and that he has encountered us before. This is an example of how some user continuously act as "security guards" for these groups, actively cleaning them of members who do not adhere to their rules and practices. This can also be seen, as multiple groups exist with the purpose of exposing and warning about scammers. Here sellers, buyers and advisors from PIED related groups participate. Below are two examples:



Screenshot 7: Example of group focused on exposing scammers and snitches (Appendix 5).



Screenshot 8: Example of groups focused on exposing scammers and snitches (Appendix 5).

Notably, one of the groups not only refers to "fraud/scamming" in its name, but also "snitching" alluding to users giving information to authorities or exposing material from the groups. This shows that an internal system of punishment exists, where users engage in vigilantism to stop

and deter scammers in the social world. It should be noted that these groups are not only relevant to PIEDs, but almost all illegally traded products on Facebook. The consequences of being posted to one of these groups will almost always be a type of investigation, where administrators try to figure out who is telling the truth or resolve the problem. Cases where a seller or buyer is not cleared of their accusations, often leads to them being excluded from most groups indefinitely (see interview 5). In more severe cases, where one party might wish to get their money or product back, illegal debt collectors or "enforcement groups" might be hired to force the other party's hand.

These groups are part of a larger negotiation that defines what can and cannot be done in the social world. We see them as a security net for buyers and sellers, who cannot rely on public authorities, as they themselves are breaking the law. The role of buyers in the ecosystem of the social world of PIEDs, is predominantly a maintaining role, supporting and adhering to practices set forth by admins and sellers. We see that buyers especially play a role in upholding the order and rules of the social world, by policing their fellow buyers, and actively exposing sellers with malicious intent.

Advisors: Self-taught confidence

In the ecosystem of the social world, sellers and buyers make up the majority of actors, and their work and actions therefore constitute most of what we consider to be the social world. But the nature of the products sold within the social world have created another central role. The *advisor*. As PIEDs are prescription medications, they should only be taken in certain doses, cycles and formulation, which requires expert supervision. This is where the advisor comes in as a connoisseur. The task they have taken upon themselves is to help inexperienced users with PIEDs to ensure they minimize the harmful effects and simultaneously reach their desired goals. The need for advisors in these markets is one of the ways we trace a sense of cohesion between different groups and actors. All the advisors we have spoken to, heard of, or otherwise encountered through our fieldwork, have all base the need for their work on a lack of knowledge on the buyer's side. While the internet offers information on PIED use, most advisors see this as poor advice or misinformation. This sentiment could be traced in our interview with informant 2:

"*When you sit and look at the 'advice' being shared online today, and the role models that are out there, it's absolutely terrible. I try to tell them they're crazy, that those products and doses are completely unnecessary.*"

(Informant 2, Interview 2, Appendix 1)

What is shared here, is a somewhat empathic argument, that an advisor's presence in the social world is to combat misinformation and to ensure proper use. In the case of this informant, it might be the case as he works for free, often contacting buyers by himself or giving advice in the comments if buyers seem dangerously inexperienced. In this case, it also shows the sense of social cohesion, as the advisor seek to create a non-harmful environment for users, and at the same time making the market more accessible to new and inexperienced users. But advisors are by far not a purely altruistic group of people, and the majority work for money. To this point, it should also be added that the role of advisors is often connected to the seller. While actors who work purely as advisors exist, they are somewhat rare, and we have only encountered a handful. Still, they have an effect on the ecosystem of the social world in two ways. The first is their commitment to the values of care, which we will touch upon later, and upholding these values by attending to inexperienced users. More than just upholding it, they are also further it and solidify its role as central in the social world. The second way is by lending credibility to the social world and giving the perception that "experts" are present. Meaning that they can differentiate themselves from other markets, such as that of illegally traded opioids.

The concept of expertise and its role in the social world will be saved for later, as the conceptualization of it, and its role in the social world, is central to our study. While Advisors play the least harmful role in the social world, they should not be taken as "good" actors in contrast to those who sell PIEDs. Especially in the context of their expertise, all of the advisors and sellers who offer advice, are all self-taught and have no formal training, or knowledge of PIED usage. When considering the possible harmful effects of PIEDs, self-studying is in many ways inadequate, as it is up to the specific person to navigate in a sea of misinformation, possible outcomes and studies. Therefore advisors, to some extent, engage in a practice that is as harmful as selling PIEDs, as their presence presents the social world as more considerate or safe.

Admins: Guardians of the social world

A group of actors that do not have a direct effect on meanings, values and practices in the social world, is group administrators, or admins for short. These actors are not directly involved in trade or discussions surrounding PIEDs but instead administer the groups as a whole. Therefore, they are not directly involved in the social world of PIEDs, but instead have an indirect effect on it, by setting the rules for groups. This has a minor effect on interactions in the social world, as some admins put constraints on what language can be used, what can be sold and how it is sold. These admins often play very little role in actual interactions, where their main function is banning people or removing posts that go against their internal rules. Often we see that the different groups are administered by the same people, or profiles, who moderate several groups at the same time, or engage in iterative group creation.

Chapter summary: Actors in the social world

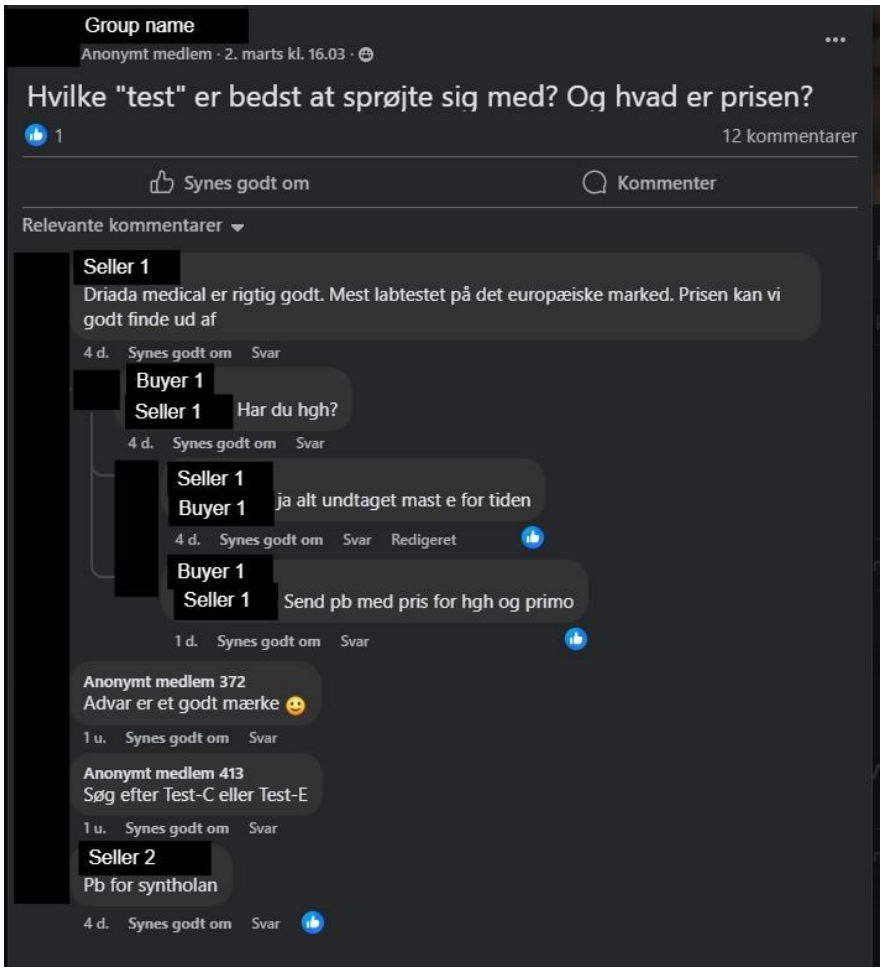
In the previous section on actor groups and their roles in the social world, we have explicated the functions and characteristics of several groups. These groups where sellers, buyers, advisors and admins. For sellers we showed that there were three distinct types of sellers: the major distributor, diverse distributor and opportunistic sellers. Of these three, the major distributor, plays the largest role in the social world, being able to define values, meanings and practices surrounding PIEDs. In our section on the buyers, we showed that they have two major ways of affecting the social world: promotion and vigilantism. Especially promotion showed the cohesion between actors in the social world, as this played into major distributors' reliance on personal relationships. The two later parts focussed on advisors and administrators, two groups of actors that only indirectly affect the social world. In the following section, we will look at how these groups interact to create and ascribe values to artefacts and actions.

Where Meaning Emerges: The Work in Social Interactions

In this section, we look into how meaning and value are continuously shaped through everyday interactions in the online PIED social world. Rather than treating terminology and trust as fixed commodities, we view each question, clarification, and comment as a small work of meaning making. Buyers and sellers engage in ongoing micro negotiations as they define product categories, dosages, and manage reputations, so that shared understandings emerge only in the moment. By tracing these frontstage exchanges and the backstage shifts into private messaging, we highlight how social actors collectively produce and refine the cultural framework that underpins trust, expertise, and value in this illicit digital marketplace.

Meanings in Motion: Work in Everyday Exchanges

When turning to our analysis of interactions in the context of PIEDs, we noticed multiple mechanisms through which participants co-construct value in everyday exchanges, including continuous micro-negotiations, role-status negotiations, and expectation alignment. Drawing on the symbolic interactionist concept of work, we argue that meaning remains provisional and is continuously (re)produced through discursive and practical engagement rather than fixed once and for all. Our empirical data illustrate how both buyers and sellers strategically employ questioning and clarification, to negotiate a mutual understanding of the core terminologies and concepts that underpin PIEDs. In the discussion captured in observation 4593, we observe an instance of the seller and buyer dynamic unfolding within the social world of PIEDs.



Observation 4593: Discussion in the comment section of a post regarding a buyer asking for the price and advice on the best injectable steroid treatment (Appendix 2).

An anonymous buyer initiates the exchange by requesting recommendations and price estimates for steroid treatments. By doing so, the buyer creates a situational definition, establishing a shared context in which value and expertise become negotiable commodities. Seller 1, in turn, responds by elevating Driada Medical products to the status of market baseline. Thereby performing what Blumer described as the "*work*" of meaning construction. The seller's endorsement functions both to signal product quality and to assert interpretive authority over the domain of "*test*", a shorthand for testosterone esters. A second buyer's follow-up question on Seller 1's comment, being "*Do you have hgh?*" initiating a further round of semantic calibration, as the term HGH must be co-defined in real time by both parts. Seller 1's reply, "*yes, everything except mast E for now*" serves to delimit the category of available products and to refine the vocabulary. Each question and each specification operate as micro-negotiations, mo-

ment-to-moment adjustments that stabilize a provisional understanding of key terms. The process imbued in the conversation exemplifies the core symbolic interactionist insight that meaning is not a fixed attribute but is continuously (re)produced through communicative acts. Finally, the request to shift the conversation between seller and buyer away from the public comment section to private messaging "*Send pm for price for HGH and primo*" also marks a shift from Goffman's front stage, to the backstage, where the substantive details of price and quantity are negotiated away from public view. In this move, participants engage in what Goffman would call the dramaturgical maintenance of a public persona, simultaneously managing impressions and protecting the integrity of the transaction. Taken together, these micro-negotiations demonstrate how actors, through the iterative exchange of symbols, collectively construct the cultural framework that underlies both trust and value in this illicit digital economy.

Extending our analysis to the interactions captured in both observation 4593 and 4634, we observe a continuation and elaboration of the same symbolic interactionist processes. Turning to observation 4634, a major distributor publicly stages an elaborate performance of expertise:

Observation 4634: A seller advertising for steroids and guidance surrounding the treatment (Appendix 2).

In this post, the major distributor seeks to solidify their expertise "*We are READY with the best service, top quality, broad assortment at sharp prices*" and even further emphasizing their authority by citing "*over ten years of experience and two national titles and six international gold medals*". Through this form of self-presentation, the seller mobilizes both quantitative credentials, such as years of experience, achievements in atheltic competitions, and qualitative endorsements, such as claims of superior service and laboratory testing, to construct and assert an authoritative market identity. The sales post is followed by a buyer's subsequent inquiry regarding secure shipping. The seller's brief response "*DAO does not work with five O*", referring to the popular shipping service which apparently does not cooperate with authorities, illustrating a dynamic process of role-status negotiation. While the seller's initial framing seeks to stabilize their expert status, the buyer's question pokes at the seller's claims. This momentarily unsettles their authority and necessitating further symbolic work to reaffirm the trustworthiness and legitimacy of the seller and their shipment methods.

These negotiations not only happen in the context of expertise, but also concerning other attributes of the actors in the social world. Turning to observation 4632, we see an even more detailed case of negotiations concerning both definitions and vendor credibility:

Observation 4632: Buyer asking for injectable HGH and steroids (Appendix 2).

An anonymous buyer initiates the exchange by articulating his specific needs for "*HGH and good Test, injection preferred, approximately a 6–12-month cycle*". The buyer's opening statement in the post, serves as a situational definition, setting the parameters for negotiation. The post is followed by multiple sellers responding, each seeking to position themselves as the most reliable and authoritative source. Another buyer chimes in to promote a major distributor, labelled as Seller 1, crediting them as being "*very skilled*" and capable of guiding a buyer through an successfully initial cycle. Seller 2, being a diverse distributor, then enters the comment section, by querying the buyer's geographic location, thereby initiating a negotiation over logistical convenience and encouraging a move to private messaging. Seller 3, who actually is an advisor, also illustrates another typical dynamic from experts, as they challenge the buyer's assumption regarding the cycle length, stating "*HGH for 16 weeks? You won't get anything out of that…"* thus revising the buyer's proposed regimen according to their interpretation of best practices. Finally, Seller 4 seeks to reinforce product authenticity by claiming access to laboratory testing and emphasizing Danish quality standards. Each participant's intervention functions as an attempt to adjust, affirm, or redefine the shared understanding of key elements such as cycle length, product authenticity, and delivery security. These interactions reveal that the meanings attributed to central terms and practices are not fixed but are instead constructed dynamically through successive exchanges in the comment sections etc. Moreover, the repeated invitations to shift from public comment threads to private messaging illustrate the maintenance of a boundary between frontstage and backstage interactions. On the front stage, actors work to establish credibility, negotiate initial expectations, and perform appropriate identities for a broad audience. In the backstage setting, away from public scrutiny, participants engage in more detailed negotiation regarding prices, delivery methods, and other sensitive transactional specifics.

The three illustrations showcased above, serve as examples of the core symbolic mechanisms at work, as we have observed within the PIEDs social world. First, micro-negotiations over terminology stabilizes provisional meanings through a sequence of questions, clarifications, and corrective statements. Second, role-status negotiations are enacted as sellers deploy technical language, biographical capital, and external validations to assert expertise, while buyers simultaneously endorse or challenge these claims. Third, the iterative alignment of expectations

takes place through the collaborative definition and redefinition of regime parameters, shipping protocols, and notions of product quality. Meaning and value in these digital communities and their markets, are not static attributes but are emergent, continuously reproduced through the symbolic labor of interaction.

Symbolic Engagement: Working with coded language and market cues

When engaging in the online communities of PIEDs, signs of cultural behaviours amongst users in the groups indicates tacit knowledge about a set of values and norms concerning their exclusive and distinctive behaviour. One aspect that became clear to us from the start, is how the members manifested meaning through language, where verbal and written codes are used to be understood by members that engage in these communities of grey-zone trades. Zooming in on the online markets of PIEDs in the groups, both sellers and buyers rely heavily on a semiotic repertoire. These include metaphors, alphanumeric codes and emojis to construct shared meanings, while avoiding detection from the platform's moderative algorithms. To be more specific, these symbolic mechanisms perform different intertwined functions. They conceal illicit content from the automated moderation, while signalling in-group membership and expertise. At the same time, they shape the market expectations around product quality and safety. Drawing on the symbolic interactionist lens these mechanisms also continuously reproduce meanings through discursive work. We examined wordplay such as "*slik poser*" for mixed packages of steroid treatments, coded language such as "*G3@®*", referring to the slang word gear meaning steroids, and the "💪 💉 " flexed biceps and syringe emojis. These operate as market cues that both hide and reveal the substance of the exchange, which we will delve deeper into in the following section.

Looking at our empirical material, observation 4769, shows a major distributor's common metaphorical framing of PIEDs, transforming them into harmless everyday objects such as candy bags, while semantically concealing their illicit products.

Observation 4769: Major distributor using coded language (Appendix 2).

The seller explains that he is now active and promises "*the best Danish candy bags of the highest quality*" with lab-tested "*sugar content*" for every "*candy mouth*". By generating a candy metaphor in the sales post, the seller reframes packages of PIEDs to harmless sweets. While also using the metaphor to say "*sugar content*" instead of dosages or concentration, to sidestep the platform's algorithmic keyword filters that otherwise possibly would have flagged the drug terminology in the post. Meanwhile the seller's playful appeal to his customers having a "*sweet tooth*", also implodes the stigma of the illicit PIED usage into a familiar or even affectionate buyer identity. From a Goffmanian perspective, this is a textbook example of front-stage normalization, as the seller uses these mechanisms to perform a polished, reassuring persona, that potentially reduces buyer anxiety and subtly shapes expectations around product quality, trustworthiness, and shared enjoyment.

Taking a closer look at the use of coded language, especially amongst major distributors, we also see the use of alphanumeric coding to further encrypt the product reference, while emitting in-group expertise.

Observation 4486: Example of alphanumeric coding in Facebook sales post (Appendix 2).

The string "G3@®" in observation 4486, stands in for "gear" being a slang word for steroids. The seller's choice of substituting drug terminology with numerals and symbols both prevents, as previously mentioned detection from moderation algorithms on the platform, while also signalling membership or connoisseurship in the social world. Therefore, we see that these codes serve as an algorithmic camouflage from outsiders, for example authorities, while serving as a credibility cue for insiders. The transformation of normal language into slang, and from slang into codes, also has to do with constraints and affordances. While these groups present different affordances when it comes to anonymity, outreach, and traceability, they also present the users of these markets with constraints, such as the fear of algorithmic detection. Facebook and most Meta platforms use algorithms that constantly parse through content to detect whether illegal activities are taking place on specific pages, profiles, or groups (Gorwa et al., 2020). This also extends to closed groups. This constraint has shaped the symbolic nature of this social world, as they make use of coded language to evade detection, which in turn also demands that the present actors adhere to these codes.

These symbolic strategies constitute the semiotic labour of these online PIED marketplaces. During our field work in the groups, it became clear to us that there are continuously ongoing processes of meaning making. Metaphors, coded language but also symbolic icons such as emojis are woven into these covert and cohesive discourses surrounding these PIED markets. We have observed that emojis play a crucial part of sellers' advertisement in coded language as they serve as a rapid visual that can compress product attributes into instantly recognizable

icons. Looking at our empirical data, we see how the emojis such as flexed-bicep (💪) and syringe (💉) operate as stand-ins for terminology. For example, these two emojis' presences, when accompanied with a price list, or an opening phrase such as "*Everything in 💉💪 in stock*" accomplishes the task of visually orienting prospective buyers to the method of injection together with strength and hypertrophy. At the same time, it maintains a plausible deniability and avoidance of using explicit pharmacological names for their products, as these things can be discussed further in a private message. In doing so, emojis anchor the seller's promises in both technical form and desired effect, guiding buyer expectations about regimen, dosage, and outcome through a shared semiotic shorthand. The result of all these mechanisms turns out to be a dynamically produced cultural framework, through which these PIEDs and illicit substances are rendered familiar, negotiable and experientially potent.

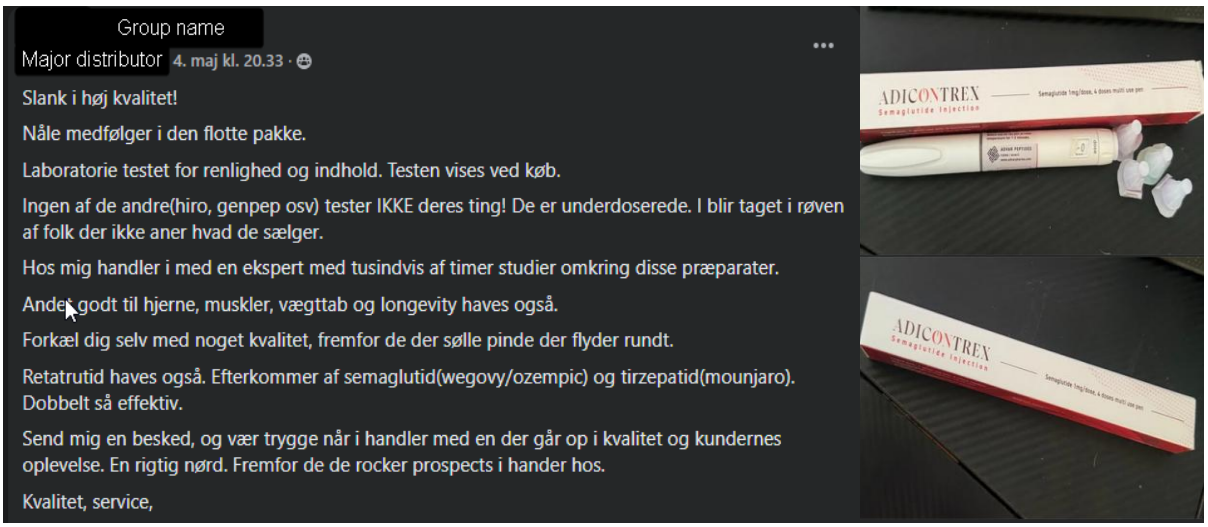
Another significant layer in the semiotic strategies of advertisement, appear as mentioned, through their visual communication, where some sellers tend to make use of product photography accompanied by handwritten text of product names. As illustrated in observation 4292, sellers often display their goods, including vials of testosterone, growth hormone, and sexual enhancement pills, on a piece of paper with the product names written manually. This example of basic form of advertisement reinforces how sellers manoeuvre to bypass platform moderation, while also increasing authenticity, credibility, and community-specific semiotics. By avoiding digital text altogether, sellers sidestep the keyword filters, and automated moderation tools deployed by platforms like Facebook, which are programmed to scan for specific terms in relation to these grey-zone markets online. These handwritten product identifiers, such as "Semaglutide", "Sustalan" and "Sexlan" are visible to buyers, but remain hidden to automated systems operating as a form of analogue camouflage in these digital environments.

Observation 4292: Example of handwritten advertisement in sales post from a major distributor (Appendix 2).

Furthermore, the handwritten labels and visual exposure of the products also serve to reassure potential buyers of the seller's legitimacy, in a marketplace where scams and counterfeit products often float around. Many of these products mimic the aesthetic of non-medicinal packaging, resembling candy boxes, or gum packets in their playful, colourful presentation. This not only softens the perceived risk associated with illicit drug use but also aligns with earlier observations on how metaphoric framing, e.g. candy bags, functions to normalize the trade and products. Mechanisms like this also once again, rebrands illicit substances as harmless or even pleasurable commodities. Thus, the aesthetic choices seen in this post subtly blur the lines between medicine, indulgence, and lifestyle products, contributing to a broader symbolic strategy that renders PIED use less taboo and more marketable. The analogue nature of this strategy reinforces the informal and peer-oriented character of the online PIED marketplaces. Unlike polished pharmaceutical marketing, this aesthetic is raw, direct, and evokes the feel of an underground, yet organized marketplace.

Sellers and Buyers in Action: Influencing the market and product perception

After spending a copious amount of time in the field, it became clear to us that within these online markets, some sellers do more than listing their products and set prices. They carry out expert "*work*" that shapes how buyers view quality, safety, and value. Especially major distributors seek to present their products as more valuable by connecting them to an assortment of markers. This can be seen in screenshot 9:



Screenshot 9: Example of a major distributor using sales mechanisms to influence product perception (Appendix 5).

In the screenshot, we see how a major distributor uses technical checks, visual presentation, and identity claims to make a product seem more valuable. Although buyers only see a picture of a branded semaglutide pen, and its box with needles, on the sales post, the seller also points to factors like laboratory purity test, dose-accuracy checks and thousands of hours of study to influence the product perception. Turning to symbolic interactionism, this sales post works as an example of how an object's meaning emerges through social interaction. By describing these tests and studies of the product, the seller turns an ordinary semaglutide syringe into a valuable medical device. Promising to show test results at purchase, creates a shared understanding that this is a science-based exchange. Buyers then expect, and will pay for, the guarantee that their drug contains the stated dose and no harmful impurities. These technical details serve as signs of higher quality. Lab-tested purity shows scientific thoroughness, the multi-dose pens imply professional and medical standards. The seller claims that other brands such as Hiro and

Genpep, two commonly sold brands in these groups, are of worse quality and not tested. Thereby separating his product from others, also stating "*Treat yourself with quality, instead of the puny sticks floating around*" hinting to these unregulated injections. When sellers display these valuation mechanisms in their posts, they change the product's social meaning. This changes the narrative of the product. What once seemed an illicit trade of a prescription medication, becomes a seemingly legitimate transaction. This redefinition of the product lets sellers charge higher prices for their products, as they seem to stand out as safer and more reliable.

The visual appearance in the sales post also carries meaning to the product perception. The seller contrasts his "*Finer packaging, accompanied with needles*", to the other "*puny sticks*" sold on these markets, hinting these sellers "*rips people off because they have no idea what they are selling*". By disparaging other sellers and their products, this major distributor aims to show buyers a new standard of "*real quality*". Buyers in these markets use these cues to judge value, reinforcing the seller's higher price. Finally, the seller calls himself a "*true nerd*" and refers to other dealers as "*biker prospects*". This identity claim does key interaction work, as it creates solidarity, since the word "*nerd*" implies that he has the technical and professional care combined with his deep knowledge, to attract buyers who value precision. It distances the seller from the risk of trading with "*biker prospects*", that he suggests are amateurs, who only care about the profit from the sale. It also builds trust, since a shared nerd identity frames the sale as being between people who respect details and good quality products, while also amplifying this major distributor's expertise. This also lowers perceived risk and supports the higher pricing. We see that expert checks, technical signs and identity claims are not extras, but the core work that builds product meaning. By managing impressions, and framing the post as scientific, while forming an expert identity among buyers, the seller turns a simple semaglutide syringe into a high-value medical commodity. Thereby this post is a great example of the hidden labour that enables higher prices, and product perception that shapes how the PIED market can be understood.

Partial summary: Value construction

In this section, we have demonstrated how buyers and sellers in online PIED marketplaces continuously co-construct both meaning and value through a series of micro-negotiations. First,

the examples from observation 4593, 4634 and 4769 show that key terms, such as “HGH,” “test,” “mast E”, are never pre-given but are (re)defined in real time, through question-and-answer sequences in comment sections, that stabilize provisional understandings. Second, we observe sellers leveraging biographical and technical capital, e.g experience, competition titles and laboratory testing, to negotiate elevated role-status, while buyers’ follow-up questions simultaneously challenge or reaffirm that authority. Finally, the shift from public comments on the front stage, to private messaging in the backstage, illustrates how participants dramaturgically protect sensitive transactional details while maintaining a credible public persona. In summary, this part of our analysis confirms that value and meaning in these digital markets are not fixed attributes. They emerge from ongoing symbolic labour, as each clarification, status claim, and expectation alignment, is a micro-negotiation that collectively reproduces the cultural framework. This enables both trust and price formation in an otherwise illicit economy.

Articulation in PIED's Discursive Landscape

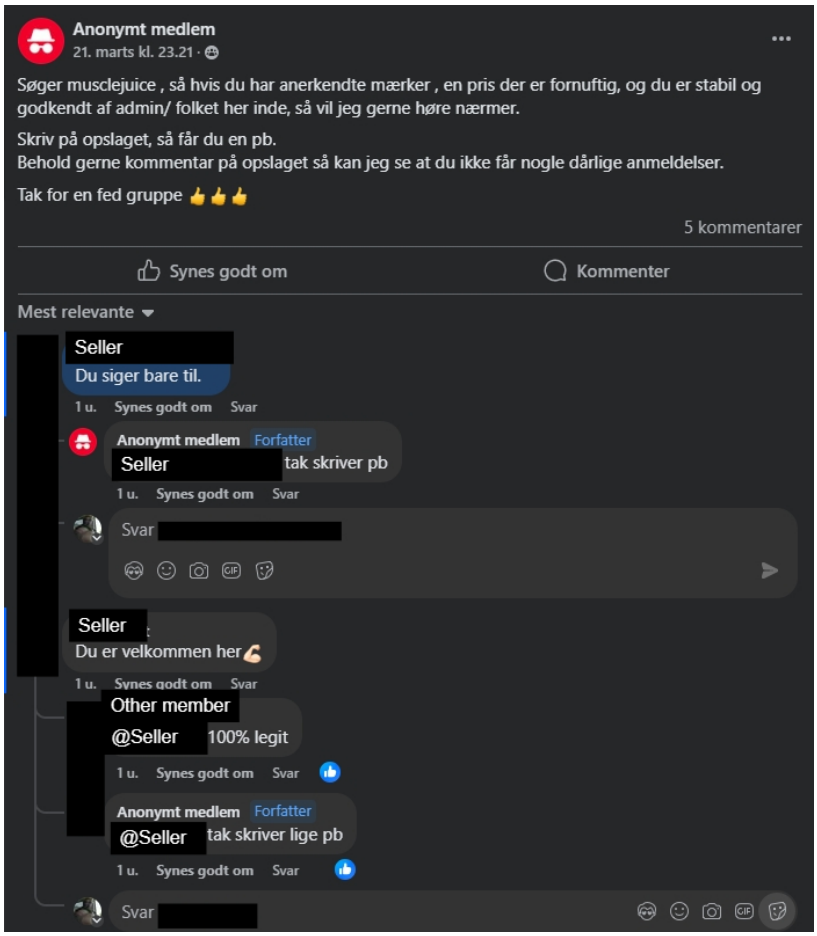
In the following section, we explore which *discursive frames* foster meanings and values, and how they are constructed within the social world of PIEDs. The process of creating meaning and values through interaction, can more be referred to as the articulation process. This encompasses how identities are defined in the social world, and what meanings are ascribed to action. We will investigate this through the concept of *discursive frames*, which we use to describe the continuously repeated sentiments that members use to define their reality. Drawing on our empirical data, interviews, forum posts, and comment threads, we identify and analyse discursive elements that shape meaning, values and establish norms. Rather than treating language and advice as static or purely informative, we examine how discursive frames around trust, care, expertise, and scientific authority are continually (re)produced and reinforced through interactions. These discursive frames not only naturalize the use and sale of PIEDs but also contribute to a shared cultural logic that governs the community's practices and boundaries. Through this lens, we trace the interplay between language, social identity, and perceived legitimacy in these online spaces.

Identifying Key Elements within the Discursive Framework

When we talk about ascribing meaning to artefacts and practices, a significant part of this process involves forming discursive frames around actions that naturalize specific behaviours and social roles. Especially in the social world we are studying, the central activity and artefacts are ones that can be quite harmful. This creates an environment of different opinions and expert advice given publicly, such as the example of normal conversations amongst actors in these communities, as pictured in observation 4632. We find a particularly rich discursive landscape in comment sections of different posts within these communities. Here, discursive frames are not secondary, as they become the main mechanism through which practices like selling, advising, and consuming PIEDs are rendered meaningful, acceptable, and even philanthropic at times.

We have identified several recurring discursive frames in our empirical data, most of them surrounding what we consider to be *trust, care* and *alternative medicine.* These discursive frames are not abstract ideals. They are actively (re)produced through everyday interactions in

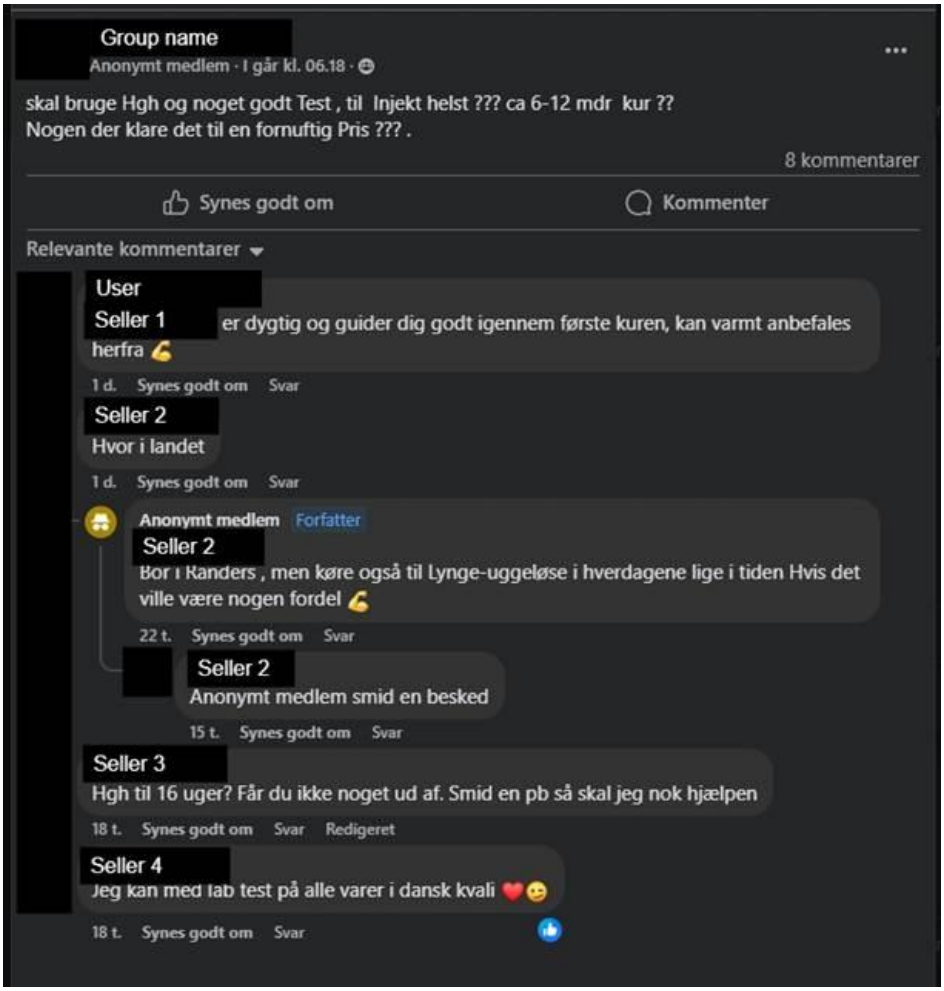
forums, Facebook groups, and private chats. Discursive frames surrounding care and trust appear in different ways throughout the social world. Especially among major distributors who take part in creating a discursive frame that supports the values and meanings that is the foundation of this social world. In observation 5420 a buyer makes a request that is both practical and symbolic, as they ask the seller to leave their comment visible in the comment section of the post. The buyer writes "*Please keep the comment on the post so I can see if you receive any bad reviews*", which reflects a strategy to crowdsource trust from potential sellers:



Observation 5420: A buyer encourages other members to validate sellers in comments (Appendix 2).

By encouraging open visibility, the buyer creates an opportunity for others to step in, either to endorse the seller or to warn against them. It is an informal, yet very powerful form of community verification. This sort of trust mechanism within the community is reinforced as a third party member, marked as "Other member", enters the chat, with a brief but strong endorsement saying "100% legit". These kinds of community mechanisms tap into the herd behaviour and

heuristic way of thinking, where individuals tend to follow the perceived consensus of a group, especially in situations involving risk or uncertainty. When trust is echoed publicly by other members, it reduces the perceived risk for potential buyers and strengthens the seller's informal reputation. These micro-interactions illustrate how peer-to-peer marketplaces operate around a discursive frame of trust. Turning to observation 4632 once again, the observation provides an important illustration of how these discursive frames are articulated:



Observation 4632: Example of buyer asking for testosterone treatment and expert advice (Appendix 2).

In the post a buyer solicits HGH and testosterone. He also states that he is looking for "*good*" testosterone, highlighting his own demands for high quality goods. In the comments, we see traces of the discursive frame surrounding care. Multiple of these comments show a somewhat surprising level of concern for the buyer. One commenter, identified as seller 3 writes: "*HGH for 16 weeks? You won't get anything out of that. Drop me a DM and I'll help you*". What is

seen here is that many of the actors are quick to pick up on inexperience and are eager to engage with inexperienced users. This is of course, on one hand for the simple purpose of creating a new customer, but many also do this out of concern. Through several sellers and advisors, we have traced the discursive frame that the inexperienced users should be protected, and that they are in a unique position to do so. We saw this especially in our interview with one advisor:

"My clients are unfortunately very unintelligent, and I don't think they should be taking steroids when they have no idea what they're doing. But the truth is, they really don't know what they're doing — they just want big muscles and don't actually care about the side effects of doing it wrong, at least not until they experience them."

(Informant 4, Interview 4, Appendix 1)

In this quote two arguments are made for the advisors work in PIED counselling. The first is, that most of these users are not capable of administering these substances themselves and therefore should be guided by others who know better, i.e. the advisor. This first argument supports that one of the major discursive frames surrounding the online sale and PIED counselling, is that the sellers and advisor view themselves as "experts" who are able to provide adequate advice for users not to hurt themselves. This is how the main discursive frame of care is expressed by members of the social world. The process of constructing this discursive frame is a major part in the articulation process surrounding members of the social world's understanding of care. Here we also see that major distributors are able to establish their own identity. They are both able to stage themselves as reliable distributors of PIEDs, while also presenting themselves as communal caregivers, who take responsibility for inexperienced users. This shows one of the articulation processes surrounding the definition of the meaning of care in this social world, where sellers and advisors position themselves as central caregivers of the social world.

For these sellers, it would always be easy to simply present themselves as empathetic actors, who engage in best practice guidance, and then disappearing when the buyer has purchased from them. But when we extend our analysis from Goffman's front stage to the backstage, we see that this goodwill attitude holds true. In one of our interviews with a major distributor/advisor we learned that sellers internally have a code of conduct:

"In the circles I'm part of, it's a no-go. We have some great communities where people help each other and call out those who scam, cheat, sell to minors, etc. People get blacklisted and

banned straight away if it's discovered they're selling to underage individuals, and at the same time, the minors are also banned or given guidance about diet and training and sent on their way."

(Informant 5, Interview 5, Appendix 1)

The quote presents us with a rare glimpse into the backstage environment of the social world. One which is hard to reach. The seller states that selling to minors is a "*no-go*", which will get you banned and blacklisted from the community. Here we see a part of the large articulation process that defines care, where the meaning of care is being negotiated and defined from a standpoint of professional integrity. We see that for the sellers and advisors, care is a legitimate concern, which manifests itself as a form of professional integrity backstage. When they state that "*People get blacklisted and banned straight away",* it shows us traces of a larger negotiation. Here sellers, especially major distributors, have negotiated that you should not sell to minors, which has become a critical part of engaging in the community. This shows the overall discursive frame of care in the social world of PIEDs, exists both frontstage and backstage.

The discursive frame of care both exists on this level, which we refer to as the practical level, but on a macro- or idealistic level. A larger discursive frame of care also exists. It takes on the form of distrust in healthcare systems, or what we refer to as alternative medicine. We have previously mentioned that members of this social world are critical of the general public attitude towards PIED usage and its consequences. We have seen this in multiple interviews with sellers, advisors and users:

"Many doctors actually have a worryingly poor understanding of steroids, to put it bluntly. Especially considering that over 50% of steroids are medications".

(Informant 4, interview 4, Appendix 1)

In both the quotes the discursive frame is highlighted. The quote from informant 4, an advisor, suggests that most Danish healthcare professionals do not have an adequate understanding of PIEDs. In the context of this interview, he is both referring to the prescription and use of PIEDs in a medical context. He claims that medical professionals in Denmark are lacking in knowledge, but he is also referring to the treatment of the negative side effects of PIEDs. The

later part is central to the discursive frame in the social world. in the quote above this might not be concretely apparent, but another of our informants expresses it very clearly:

"A lot of people come to me with problems due to incorrect use, etc. And if they go to a doctor, they're politely told it's their own fault. And they get no help."

(Informant 2, Interview 2, Appendix 1)

The advisor in this interview is referring to negative side effects of PIEDs, and his personal reasoning for engaging with PIED users. This also shows us the discursive frame that general practitioners (GP) will not treat the negative side effects of PIEDs, which leads many users, or former users, to look for alternative routes to treat their issues. This discursive frame supports the general idea that these communities function as an alternative to regular healthcare services. The need for alternative healthcare services is not only limited to the treatment of side effects from PIED use, but also standard healthcare problems. In our interview with informant 5, a seller/advisor, this becomes apparent:

"Many of the people I sell testosterone to are, like myself, people who have been let down by the Danish healthcare system regarding their hypogonadism (they don't produce enough testosterone and feel bad). Here in Denmark, as with many other treatments, we are far behind and afraid of change."

(Informant 5, Interview 5, Appendix 1)

Here we see another example of an advisor repeating the sentiment that Danish healthcare services are inadequate in their treatments, especially of hypogonadism. Specifically relating to hypogonadism, there is a severe mistrust in the healthcare system. Throughout large parts of our data material this can be traced, as testosterone is one of the most commonly sold PIEDs in these markets.

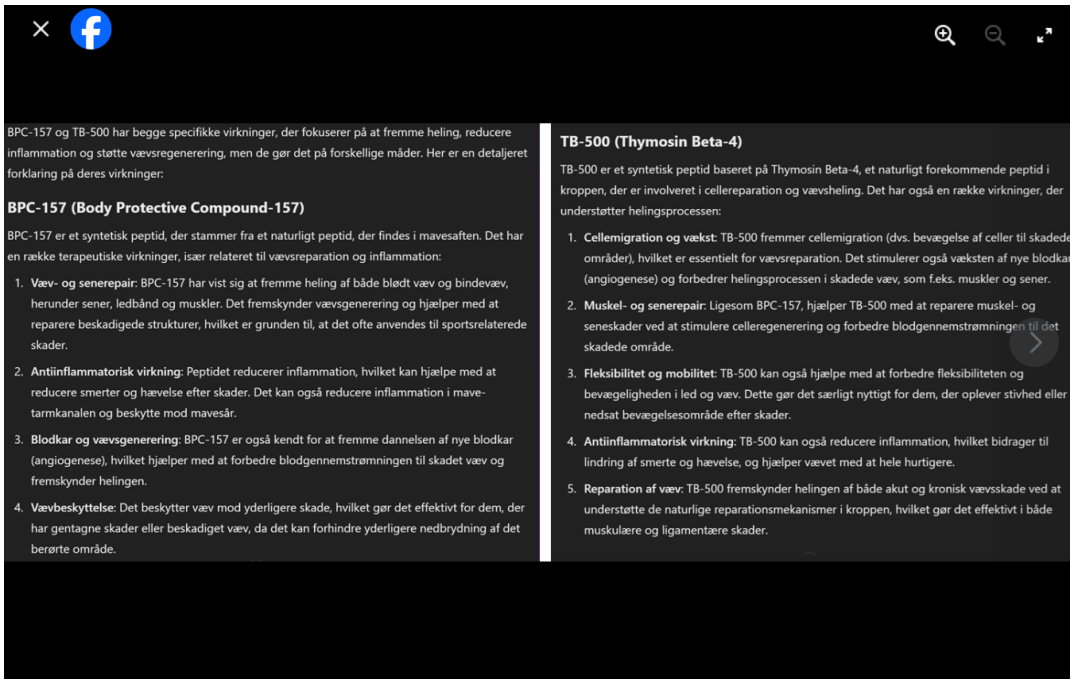
The discursive frame we are tracing here is one of distrust, but also one that calls for change. Several of our informants have called the Danish healthcare system old-fashioned and narrow-minded, believing that there is a more structural reason for the barriers that exist to obtain PIEDs, than there is scientific. Many of the members of the social world are convinced that their knowledge of PIEDs rivals that of conventional healthcare practitioners. This can, for

example, be seen in the quote from informant 4 above. What this creates is an overall discursive frame that is continuously used to justify and maintain the ideals surrounding the social world of PIEDs. The discursive frame can be boiled down to the idea that the members of the social world feel alienated from modern healthcare services and therefore seek out alternatives. When seeking out these alternatives, they are met with a shared discursive frame of a broken healthcare system that cannot accommodate their needs and does not take them seriously. This confirms them in their belief that they are in need of alternative medicine, that they cannot obtain elsewhere. For the sellers, this discursive frame gives them the perception of being an alternative, but legitimate, substitute for traditional healthcare. that provides their customers with equally good, or even better services, than they could get elsewhere. The sellers then also play a role in furthering the discursive frame, confirming their customers in the belief that these illegal activities are justified and safe.

The Advantage of Scientific Semantics

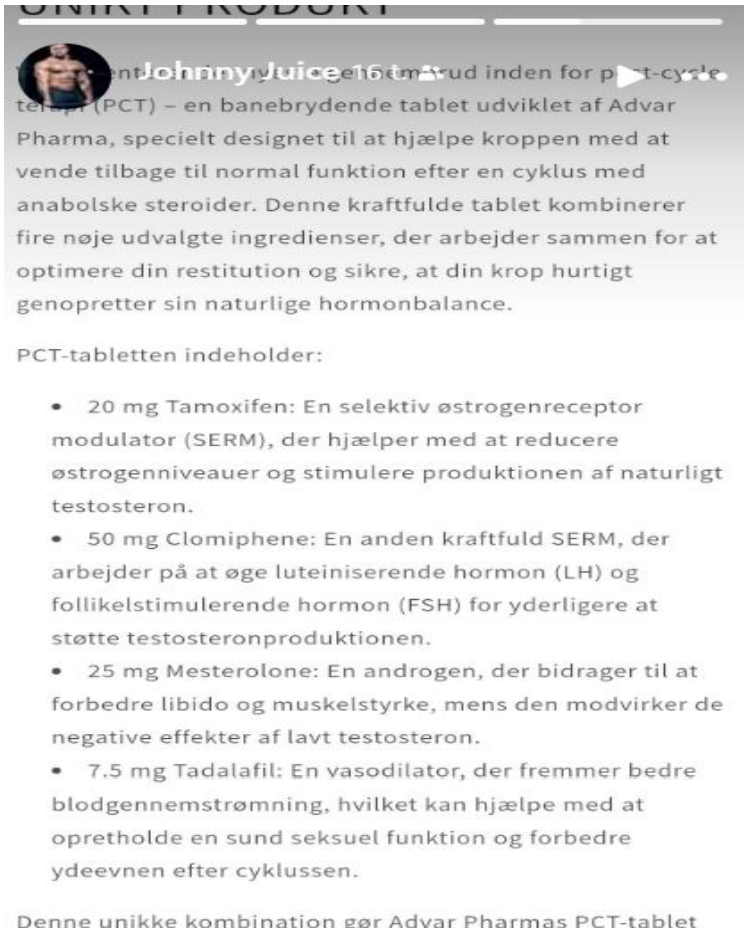
As previously mentioned, these online markets for PIEDs offer a clear illustration of how expert medical knowledge is reshaped into everyday understanding. Through the lens of symbolic interactionism, we can see that the seller's use of terms like "synthetic peptide," "angiogenesis," and "cellular regeneration" does more than describe a product's makeup, as it also actively constructs the seller's authority as experts.

In screenshot 10, the seller even showcases a ChatGPT response on the peptides BPC-157 and TB-500, complete with bullet-points and dosage claims, in order to lend an aura of scientific diligence to the offer. By positioning their post as an "AI-vetted" mini-wikipedia, they appropriate ChatGPT's cultural cachet as a modern source of biomedical information, assembling symbolic capital that signals mastery of endocrinology, and lending implicit credibility to unregulated compounds.



Screenshot 10. Seller posting technical explanation from ChatGPT of their peptide treatments in sales post (Appendix 5).

Yet these symbols do not carry fixed meaning on their own. Community members often begin to rework the AI's formal language into everyday terms. "*Angiogenesis*" is domesticated as "*better blood flow to speed healing*" and "*cellular regeneration*" becomes "*your body's own repair crew*" (see screenshot 10). Another example shows the major distributor, Johnny Juice, posting a Facebook story about PCT, "*selective estrogen receptor modulator (SERM)*" and "*vasodilator*" morph into promises to "*keep your gains*" and "*boost your pump*" (see screenshot 11). This translation by the seller is in itself a symbolic negotiation too, as technical phrases are stripped of their clinical opacity, and remapped onto gym-floor idioms that resonate with users' recovery and performance goals.



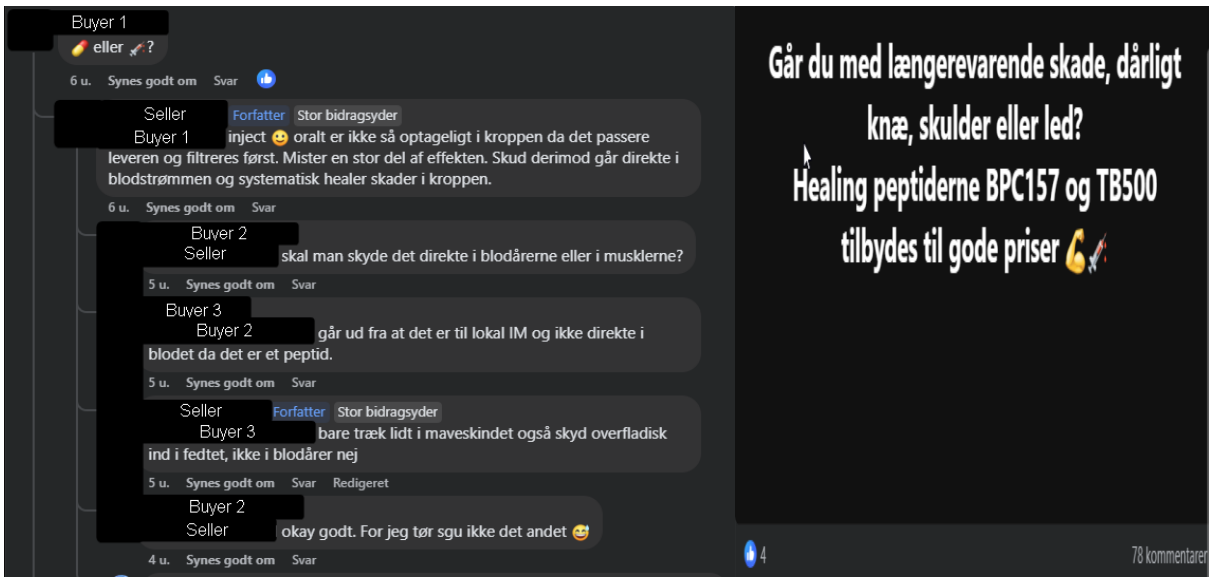
Screenshot 11: Major distributor using Facebook's story function to advertise with technical specifications of his new products (Appendix 5).

Buyers don't merely consume these translations, but they also enact them themselves within the communities. The buyers we have spoken to, report turning back to ChatGPT to decode both sellers' posts, and to refine their own stacks and dosages. Using the AI for coach-like questions. ChatGPT then functions as an active participant in the community's evolving repertoire. Each query and every peer reply become a moment of collective meaning-making, where technical symbols are affirmed, or revised. We touch upon this in the following section. The repeated co-construction of meaning, therefore, directly shapes embodied practices regarding dosages, injections and stacking protocols, that changes the collective definition of effective recovery and optimal usage. Turning to symbolic interactionism, these exchanges demonstrate that meaning is co-produced through social interactions, where sellers generate credibility by displaying an expert jargon, buyers converting that credibility into use. Over time this proces

creates a shifting landscape of science about PIEDs, where the line between expert and everyday knowledge continuously reshapes who counts as an expert and what counts as reliable knowledge.

From Posts to Practice: Building a Collective PIED Glossary

In the section above we focussed on examples of sales posts, where sellers explain the usage and dosages of their products. Jumping into the comment sections of similar sales posts we see sellers guiding buyers on how to inject and use their products. This can be seen in observation 4598. A buyer asks the seller "*pill or injection*", using emojis, regarding their products. The seller replies that injections work best, because they enter the bloodstream directly. A second buyer takes part of the conversation, as they wonder if they should inject into their veins or muscles, being afraid of doing it incorrectly. This leads to another user stepping in and explaining that peptides call for a local intramuscular shot, not an intravenously. The seller then confirms the claim, telling the buyer to inject just under the skin *"Just pull the stomach skin a little and shoot superficially into the fat, not into blood vessels, no"*, illustrating the seller taking on the role of an expert, solidifying their role as a central actor in the social world.



Observation 4598: Major distributor advicing a potential buyer on how to inject steroids correctly in the comment section of sales their post.

This back-and-forth once again exemplifies how sellers have the capability to (re)shape the understanding of expert knowledge, and how community members and sellers together build a

shared vocabulary of practices. With the technical terms like “IM” (intramuscular), “IV” (intravenous) and “*local injection*” clarified in context, novice users learn that “IM” means shallow muscle shot, and that injecting into a vein is a mistake. By correcting misunderstandings in real time, the community manages to create a living glossary, as every post and comment ties terms to actions and outcomes. Newcomers can pick up these definitions through direct Q&A’s instead of reading more scientific or formal literature on standard procedures. Through these mechanisms, all parties, both sellers, seasoned buyers and newcomers, are linked in an ongoing feedback loop.

Partial summary on articulation processes amongst PIEDs

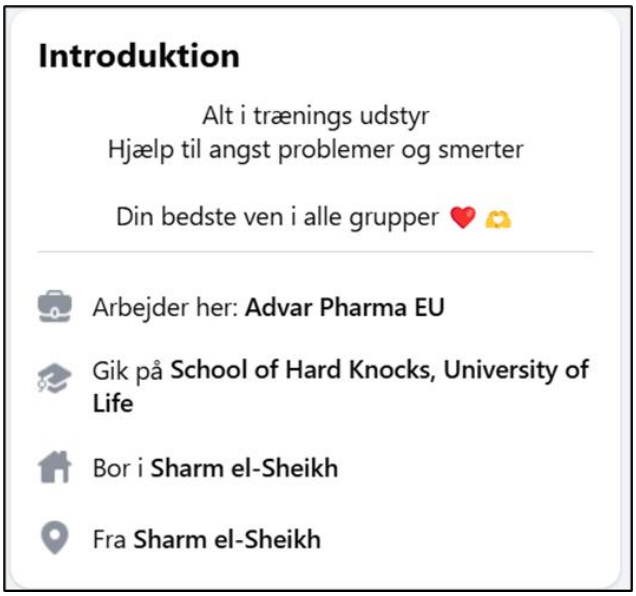
This chapter examines how participants in online PIED communities create and circulate discursive frames, which gives meaning to both products and practices. Shaping what counts as legitimate expertise and care. Focusing on comment sections and interview data, we show how sellers and distributors deploy discursive frames of trust and care. Publicly correcting novices, policing bad actors, e.g. those who sell to minors, and offering guidance to position themselves as both experts and community caregivers. These front-stage performances are backed by backstage codes of conduct, that ban unsafe or unethical behaviour, reinforcing a collective standard of professional integrity. At the same time, a broader discursive frame of distrust in mainstream healthcare underpins users’ turn to alternative sources of healthcare, especially around hypogonadism and treatment of side-effects. Through recurring negotiation surrounding protection, expertise, and system critique, community members co-produce a shared glossary of PIED use. Transforming potentially dangerous substances into socially regulated practices.

Shared Reference Points: Affordances as Boundary Objects

In this section, we examine the norms, values, and practices that are continuously (re)negotiated in the social world. We aim to show how it does not operate as an isolated, self-contained entity but as an interconnected unit within the broader ecosystem of illicit online markets. Drawing on the concept of boundary objects and the framework of symbolic interactionism, we explore how closed Facebook groups, enabled by specific platform affordances, serve as shared spaces where multiple social worlds with distinct norms, actors, and goals intersect. Rather than existing as discrete communities, the sellers, buyers, and advisors of PIEDs navigate across groups. We look at how they maintain continuity through shared practices, trusted profiles, and platform features that allow for evasion, adaptation, and sustained interaction. By examining how these digital affordances enable both cooperation and segmentation across illicit markets, we reveal how Facebook's infrastructure shapes the formation, resilience, and reach of these grey-zone markets.

Grey-Zone Markets as Boundary Objects

The outset of our study of this field was minted on the idea that the markets on which PIEDs are sold, only present a part of a larger entity surrounding the use of PIEDs. The outset for our research therefore was that the groups on which the sale of PIEDs took place constituted a community, and within the lens of symbolic interactionism, a social world. During our fieldwork this notion was challenged, as we encountered a community that expanded across different groups, and where the connection between these actors were determined by their purpose, not by the specific groups in which they found themselves. This can be seen by looking at the presence of major distributors in several groups. For example, the seller Johnny Juice, a masked and anonymous profile, was present in several groups in which it was clear that he had connection to the majority of admins. On his profile, we also encounter his own description of himself as seen in Screenshot 12.



Screenshot 12: Major distributor profile description as "Your best friend in all groups" (Appendix 5).

Here he describes himself as "*Your best friend in every group*", clearly exemplifying that his presence in the community, and the community itself, is not limited to individual groups. Johnny juice is not the only major distributor that has expanded his presence across groups but is amongst the most prominent. His profile and references there-to is noticeable across most groups where PIEDs are sold. The presence of the PIEDs social world across groups, can largely be seen as the utilization of affordances on Facebook's platform. The affordance of, first of all closed groups, but also being able to continuously create new groups are a large part of keeping this social world alive. When one group begins to be subject to investigation, which mostly comes in the form of Metas own algorithmic detection, they quickly migrate from one group to another. This move, we refer to as iterative group creation, as each group "improves" their practices to remain undetected for longer. This shows the social world's reliance on moderation but also leads us to another point. As we have described with the concept of diverse distributors, we see that both sellers and buyers drift between markets. While some only engage with the social world of PIEDs, and steer clear of other illegal markets, some of the buyers go back and forth between them. Taking closed Facebook groups as an affordance in themselves, we see that these turn into a boundary object for several social worlds, markets and communities. During our fieldwork, we saw that several different types of markets co-exist. Everything from stolen goods, opioids and illegal services, is traded, and while these markets co-exist,

their interactions are often limited. In one interview with an advisor, we asked about the feeling of community in their work:

"*Yes, there is some truth to that. For example, the way steroids are sold cannot be compared to the way narcotics are sold*".

(Informant 4, Interview 4, Appendix 1)

What we see here is a joint belief we have traced throughout the social world, that the PIED community stands out, and is separate from other markets or communities within these groups. This becomes important in our definition of groups and affordances as boundary objects, as it shows that the social world of PIEDs is willing to cooperate with other social worlds, markets or communities, to reach the shared goal of evading authorities. We therefore see the affordances of closed groups and iterative group creations as a boundary object that enables several different groups of actors to cooperate.

Screenshot 13: Example of users and gatekeepers hinting to other closed Facebook groups of similar grey-zone markets (Appendix 5).

Screenshot 13 serves as an example of the boundary object dynamics of these grey-zone online markets at work. In the first post, a member urgently directs peers to join "*a fresh group*" before the current one is shut down, posting both the direct URL and a distinctive banner image "*The Black Market*". That combination of link and logo functions like a pop-up storefront, which conveys a clear, portable brand identity that users recognize and carry with them as they migrate. This post demonstrates that groups are inherently both fleeting and tangible. Their

names, visual markers, and informal brands make each one memorable, yet users treat them as interchangeable nodes in a larger network. The second and third posts deepen this idea by showing members explicitly reaching out for gatekeepers that can lead them to new entry points in the network. One user asks where to find additional groups of the same type, while another requests invitations to similar spaces, in order to source specific substances. These requests illustrate that participants do not see each group as an isolated enclave, but instead they understand them as gateways in a mesh of overlapping markets. Actors navigate fluidly between groups, following referrals and shared conventions to access these resources. In this way, the groups themselves function less as fixed boundaries and more as linking devices, enabling coordination, reputation transfer, and collective resilience across the broader illicit-market community.

Facebook's Under-the-Hood Affordances

As outlined in our theoretical framework, affordances refer to the material possibilities for actions embedded in a given environment (Gibson, 1977). When applied to digital platforms, this framework emphasizes how specific technical features enable or constrain user behaviour (Bucher & Helmon, 2018). For this study, affordances on Facebook are not simply static functions but dynamic structures that, when appropriated by users, become key mechanisms in the formation of illicit online practices. To understand the ways in which Facebook's platform design enables and shapes the emergence of online grey-zone markets, we must examine the specific affordances of the platform. This approach is an important element of understanding the digital landscape. Our study posits that these online markets, including the sale of PIEDs, requires seeing these environments as a liminal space with blurred boundaries between everyday social interaction and covert commerce. Unlike darknet sites, Facebook is both an everyday social network and a hidden marketplace. Features of the platform, such as stories, gated community chats, anonymity options, and member vetting are used to facilitate and control the secret trades. Affordance theory allows for a deeper socio-technical understanding of how these design elements blend normal interaction with illicit commerce, showing Facebook's dual role as a public platform and a covert market.

One of the major affordances is the semi-anonymity offered by closed groups. These spaces afford a perception of privacy without imposing barriers that would restrict recruitment of new

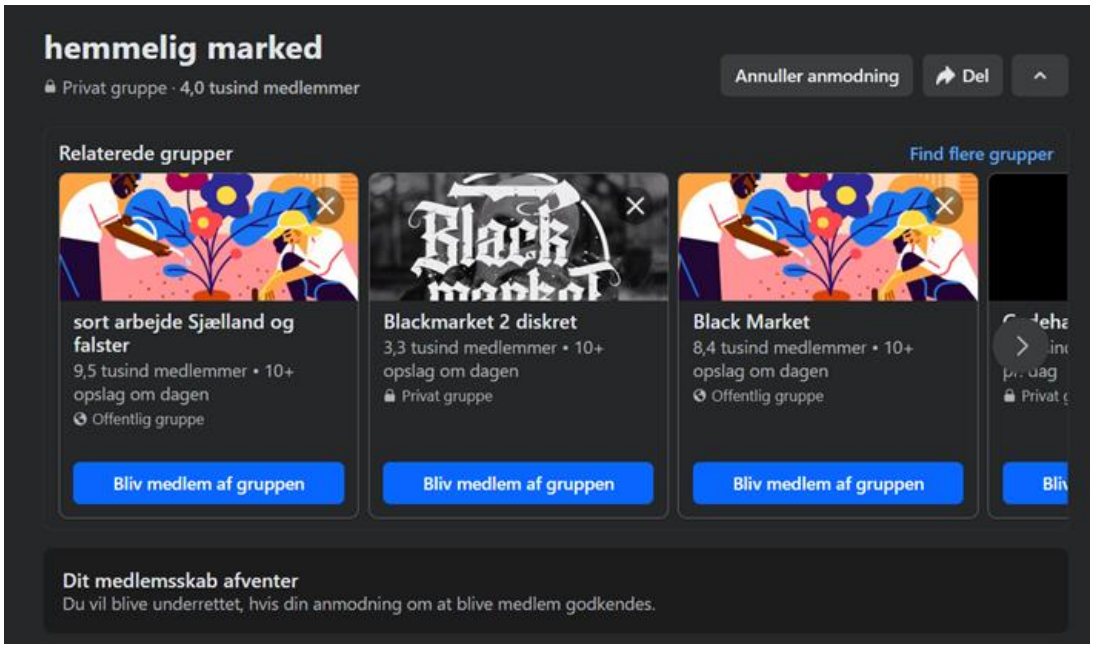
members. Entry to these groups typically only involves little more than acknowledging a set of rules or having an insider, to vouch for you. For instance, screenshot 14 illustrates the procedure of gaining entry to the group "Kun det sorte marked", with the only prerequisite for access being that applicants add the admins as friends. This process is typical of access protocols and characterizes much of the platform's affordance structure for these groups:

Screenshot 14: Application process for a closed group (Appendix 5).

Usually, application processes look similar to this and allows for group admins to filter out users, who have malicious intent towards the group and it's members, or users who previously had not followed group regulations. Meanwhile, this feature also allows for a more strategic use of limiting law enforcement access to the groups, as if the authorities wish to infiltrate such a group, it would in a Danish context require a warrant and evidence of a crime. This judicial constraint being a direct consequence of Facebook's group architecture, leaves them with the responsibility of moderation and creates quasi closed zones, where illicit activity can be coordinated with reduced fear of surveillance. This is also the case with the affordance of the platform's "community chats" in Messenger, where each chat is linked to a closed group, serving

as a pseudo-encrypted transactional hub. These chats, visible only to long-standing group members, offer a gated space where negotiation, advertisement and sale of products can occur in real time. Despite the lack of encryption and with no feature for anonymity, the nature of these chats combined with the illusion of exclusivity gives users the feeling of being protected, as security is socially constructed within the community. This dynamic is further reinforced by the affordance of iterative group creation. Authorities and Facebook's own moderation team often do not have the time to gain access to the groups, before they move their activity elsewhere. This creates a continuous and easy evasion mechanism for these groups and their members. This further illustrates how the affordance of closed groups operates as a dynamic boundary object within these social worlds. Creating a flexible and semi-closed space, where illicit markets can converge, interact, and shift tactics collaboratively to avoid prosecution.

Complementing this is an affordance that we encountered embedded in Facebook's algorithmic recommendation system. It serves as a feature to enrol new members in these groups and expanding already existing members to other groups. As we engaged with these groups and actors within them, Facebook's own algorithms helped us to find more. Below an example is shown:



Screenshot 15: A feature of Facebook's own algorithmic suggestion that shows related groups (Appendix 5).

What can be seen in Screenshot 15, is the affordance at work, where after you apply to become a member of a closed group, it immediately suggests you other related groups. This feature is

one of the affordances that accelerates group growth by enrolling new participants through algorithmic matchmaking, without requiring direct outreach by group members. These same algorithmic features also become visible through the "recommended friends" tab on one's frontpage. Facebook recommends users that frequent the same communities, and have the same interests as you, often leading to major distributors showing in the "recommended friends" tab. This recommendation of friends shows the social graph features of the platform. As frequent exposure to profiles of the same digital spaces reinforces a sense of community and trust among users. These are already immersed in the same illicit networks and facilitates an even more simplistic affordance for sellers and buyers to communicate outside of the groups.

Building on the affordance of algorithmic friend recommendations, another key feature we discovered that sellers have come to rely on is Facebook's "Stories" function. While originally designed for casual, time-limited personal updates, sellers within these illicit markets have re-appropriated this feature as a discreet visible marketing tool. Some sellers use the stories-function to post images of their new products like PIEDs, which appear at the top of users' feeds and can disappear after 24 hours. This creates a unique visibility dynamic, because the content is momentary enough to avoid long-term traceability, yet effective enough to advertise new stock. In addition to this built-in temporariness, stories can also be pinned to a seller's profile as "Highlights" transforming them into a semi-permanent catalogue or menu, easily accessible to anyone who has added the seller as a friend:

Screenshot 16: Krudttønden uses the Stories feature to promote PIEDs, specifically Testobolin (Appendix 5).

Screenshot 16 illustrates the way sellers exploit the visibility logic of the platform. By appearing at the top of users' interfaces, these stories allow major distributors like Krudttønden to maintain a persistent presence in buyers' daily scrolling routines. Although not originally designed for illicit marketing, the stories-function is reinterpreted and retooled in this context to serve the needs of these covert trades. From an affordance perspective, what seems like a simple image upload with a time limit actually produces several layered effects. The short lifespan of the post contributes to a feeling of urgency and exclusivity, while also encouraging fast decision-making from viewers who fear missing out on limited time offers. At the same time, the act of pinning stories as highlights introduces a stability, allowing the seller to build a sense of brand consistency and reliability, even in the absence of formal trust mechanisms.

Partial summary on shared reference points

In this section, we explored how Facebook groups play a central role in the social world of PIEDs. These closed groups, and the ease with which new ones can be created, act as a shared tool. They bring different actors together while also allowing each group to stay distinct. This setup allows for both connections, through iterative group creation, hidden "pop-up stores", and algorithmic recommendations, and separation. Major distributors like Johnny Juice and Krudttønden show how people use affordances like stories, group visibility, and platform algorithms to build trust and recognition across a shifting network of communities. Importantly, Facebook's affordances do more than just support illegal sales. They help shape how communities are formed, how trust is built, and how participants avoid detection. Each group becomes a temporary but reusable space with its own look, rules, and ways of talking. Together, they form a flexible network where differing social worlds, markets and communities exist side by side, each with its own social norms and practices.

Discussion

On the basis of our analysis, we will in the following discuss several points of reflection from our time in the field. These points are meant to serve as a form of further reflection, possibly serving as an outset for further work in the field or contributing to public debate. In the following chapter, we will first touch upon the no-care narrative that has been perpetuated by many of our informants. This point will serve to nuance our understanding of the healthcare system's reaction when faced with PIED users, and their relationship. The chapter will also touch upon the ethical considerations surrounding treatment of PIED users. Following this, we look at the different views on knowledge in the social world of PIEDs and discuss how it should be understood. Lastly, we look inwards at our own position in the field, and our reflections on moral judgements and prejudice. This chapter should not be understood as an attempt to take a moral standpoint or somehow point out who is in the right or wrong. The point of this discussion is to nuance and challenge our understanding of the field we have worked within.

The 'No-Care' narrative: When Failed Care Becomes the Justification of PIED involvement

While we have alluded to, and briefly mentioned it, the negative consequences of PIED usage have not been addressed in our study. And while we in the following wish to discuss certain parts of it, this is not a health science study. Neither are we in any way equipped to engage in discussions on pharmacology, and therefore we do not wish to go into a discussion of what negative effects PIED usage has on one's health. What can be stated for certain, is that the unregulated use of PIEDs can have serious negative consequences on your health. This comes in forms of infertility, raised cholesterol level, polycythaemia, heightened blood pressure, cardiac hypertrophy, multiple different behavioural disorders, and more (Bonnecaze et al., 2021). Furthermore, some studies also indicate that PIEDs overuse can progress into other forms of substance abuse (Kanayama et al., 2008). With this stated, we would like to delve into a discussion that has struck us from the beginning of our work in the field.

Looking at the social world of PIEDs, we have shown that one of the main narratives surrounding PIED usage, is a general distrust in domestic healthcare services. This is one that can be

traced internationally, which suggests that it is not a problem enclosed in a Danish context (Dunn et al., 2023). We have only looked at one side of this narrative, the sellers and buyers, which make up the illicit part of this dichotomy. To our knowledge no studies exist on the topic of practitioner attitudes, sentiments and practices in a Danish context. Our clear expectation, gathered from new articles, opinion pieces, and the few studies on the subject was that PIED users were wrong, and that practitioners in Denmark had plenty of knowledge and resources to deal with PIEDs. But when we look abroad, we see that this dichotomy might be more complicated than expected. Looking at an Australian study "*Exploring the experiences of general practitioners working with patients who use performance and image enhancing drugs"* (Dunn et al., 2023), we see that these sentiments are blurred. What they encountered in the study was that several practitioners felt they lacked the tools to handle the consequences of PIED use in individuals. This was mostly caused by the complexity of PIED usage, where the dosage and combination of substances often are very specialized to the individual, and therefore the treatment plan would also have to be very specifically tailored. When you combine this with the role of a general practitioner, putting the emphasis on general, a more complex view of the no-care narrative emerges.

In an article from Anti Doping Denmark, where 11 experts and healthcare professionals' comment on the state of healthcare for PIED users in Denmark, they state that the current picture is a "*Therapeutic no man's land*". This article agrees with sentiments shared by the Australian GPs, as they highlight that Danish GPs severely lack the tools to treat or even refer patients to relevant specialists (Anti Doping Danmark, 2023). These PIED users would instead have to find individual medical experts and begin a timely process of isolated treatments, which for many could feel like being rejected from the healthcare system. Generally, the article from Denmark mirrors the sentiments being expressed by the Australian GPs. But this is only one side of the problem. In the article from Dunn et al. (2023), they also draw our attention to the ethical considerations of GPs. In the article, they state that the rule which Australian GPs are taught is "*Do not prescribe, do not engage*". In the Danish context, we see this as well, as they in the article from Anti Doping Denmark also state the lack of knowledge on treatment decreases the willingness of healthcare professionals to engage with PIED users. What this results in is a gridlock, in which PIED users perceive that they are being neglected. There is a lack of treatment plans and guidelines, which in turn has created GPs and a healthcare system into which these people do not fit, when their PIED use goes wrong. What can be said about the no-

care narrative is that it might not relate directly to the willingness and knowledge of GPs and the healthcare system in Denmark, but much more correlates to the lack of structured treatment plans and guidelines. This has unfortunately created a situation where a group of people feel that they are looked down upon and shunned from society.

One thing mentioned in the Australian article that is hard to outline in a Danish context, is the ethical consideration surrounding PIED usage. As Anti Doping Denmark states in their article, the landscape surrounding treatment for illness caused by PIEDs is "*a no man's land*", which therefore leaves GPs open to interpreting the related substance abuse guidelines and regulation. For example, in the case of opioid abuse, there are clear regulations and treatment plans in place (Sundhedsstyrelsen, 2017), and often these guidelines form the basis of decisions regarding PIED abuse. Even though there are a multitude of differences in the two forms of substances. The freedom of interpretation for GPs therefore leads to different approaches, but one main factor in this is the balance between dispersing information, keeping patients safe, and allowing them their independence. In modern Danish healthcare practices, it is the GP's job to constantly allow for the patient's self-determination while also ensuring their health to the greatest extent possible (Lægeforeningen, u.å.). This becomes a dilemma when considering the balance between informing your patient of potential harm and helping them not harm themselves if they still decide to use PIEDs. This dilemma is exemplified in an article from the Danish Sygeplejersken Råd (Danish Nurse Council). In the article, we are presented with the dilemma of a young man who decides to take AAS and asks his doctor to monitor his health through blood tests during this period. The doctor warns him about the health risks and refuses to oversee the entire process but agrees to conduct some liver tests as a status check. The central part of this is the dilemma between keeping the patient safe by supplying him with a liver test and its results and not giving him information that would encourage him to continue. In the article, two experts give their take on the situation. Both point to the idea that willingly engaging with the patient would allow for the GP to monitor his health, but state that it is a fine line between ensuring his future health and not encouraging him (Bagh, 2013). This again shows us the increased need for more specified guidelines for PIED users, and how GPs might be less willing to engage with them for ethical reasons. This could lead to the PIED user continuing without any professional support and having to seek out the expertise elsewhere.

From Broscience to Connoisseurship

After spending a great amount of time in the social world surrounding PIEDs on Facebook, we have been presented with a digital landscape where expertise is not merely handed down from academic or medical authorities. Rather it is co-created, contested and cherished within a network of peers. In this section we discuss the way which both sellers and self-styled experts, within the studied communities, articulate being grounded in unique pharmacological mastery. Due to the absence of professional guidance, individuals who use PIEDs are forced to create their own knowledge and develop personalized harm reduction strategies. As a result, they rely on community-sourced information also commonly referred to by others as "broscience" to navigate their PIED use (Underwood, 2025). Suzanne Fraser et al. (2020) also termed this shared practice of care as "connoisseurship", as this framing acknowledges that people who use PIEDs personally often possess deeper, practice-based insights into drug sourcing, dosing and the risk mitigation. This is also echoed in the previously mentioned article from Dunn et al. (2023), where some GPs express that PIED users to some extents have a greater knowledge on the subject than them (Dunn et al., 2023). Far from being purely transactional, the sellers and experts exchanges within the social world are filled with guidance and tacit knowledge. Spanning from informal broscience to rigorously vetted research, but also the previously mentioned shared ideology of a collective vigilance. As we illustrated in the analysis of our study, understanding these narratives of communal care is crucial. It both challenges traditional hierarchies of expertise, by illustrating how lay practitioners negotiate safety and efficacy in contexts where formal medical guidance is often inaccessible. Furthermore, it reveals a deeper layer of the social mechanisms presented in our analysis, where pharmacological knowledge is distributed, validated and even sometimes gate-kept in the form of this type of science amongst peers.

In our interview with Kasper Lundgaard Krøll, Prevention Specialist at Anti Doping Danmark, we discussed how their take on the concept of "broscience" manifests in practice and how it resembles the connoisseurship framework we have identified, and how it actively shapes users' decision-making. He highlighted the following:

"It fits very well with the concept that we at Anti Doping Denmark call "broscience", where in these environments you cultivate each other's experiences and trust that what your like-minded people say takes precedence over what medical science says"

(Kasper Lundgaard Krøll, Interview 7, Appendix 1)

Broscience, despite often invoked with a smirk to signal its informal or amateurish connotations, seem to carry a more nuanced appraisal role within the communities of PIED use. The severity of the cultural phenomena is at times neglected and seen as uninformed. While others see that this type of shared knowledge practice might encourage and recruit new users of PIEDs (Underwood, 2025). Earlier studies point to the fact that alongside its harm-reduction potential, this type of broscience can also introduce new risks. The community's shared knowledge base can in some cases evolve through iterative self-experimentation and the circulation of anecdotes, supplemented by users' own readings of scientific literature. This is often filtered through multiple peer interpretations rather than direct engagement with primary medical studies. Formal research can be invoked in different contexts, as it can be selectively cited or speculated, sometimes leaping from animal experiments, or contexts without the usual methodological cautions. Yet studies point to members of these online communities still displaying considerable confidence in this peer-derived guidance. Trusting that a collective experience and observed outcomes lend legitimacy to procedures (Kimergård & McVeigh, 2014).

As research begins to reconsider broscience as a potential component of enabling environments, rather than simply being an extra risk factor, it also becomes essential to explore how these informal knowledge bases both reflect and shape the realities of PIED use. While also teaching us about reducing harm in spaces where formal science remains largely absent. These knowledge sharing practices carry a deeper peer-driven discourse that actually scaffolds users' risk-management strategies. Noted by Underwood (2025), her study also acknowledges the necessity of this knowledge sharing. Given the bad situation of having no professional guidance, this community generated knowledge must be taken far more seriously in research on PIED environments, as it compensates for the absence of medical advice. In our case, within a Danish context, we have as mentioned earlier, observed a form of connoisseurship in which users seem to critically appraise and refine protocols. Offering insights into pragmatic harm reduction. The reframing of broscience as a form of necessary peer-driven harm reduction, can be complicated by the blurred lines between formal and informal expertise, within the online communities. When we asked an individual who is widely recognised within the community

as an expert, about their knowledge and knowledge sharing practices, he firmly rejected the idea that self-taught knowledge was inherently inferior. As he puts it:

"The most skilled researcher are self-taught, since formal education usually provides only a broad, general understanding. After all, Nikola Tesla, da Vinci, and Darwin were all self-taught, so let's not make fun of it"
(Krudteksperten, Informant 4, Interview 4, Appendix 1)

This comment from the advisor, who sees himself as an expert, adds to the discussion of epistemological divide, with the basic difference between official medical knowledge and the kind of knowledge built within the community. His statement shows the clear gap between formal educational knowledge, which often ignores PIED use completely, and the hands-on knowledge that grows from personal experience with trial and error and sharing ideas with others in the community. He then further explains that even his friend, a trained endocrinologist, only got a strong understanding of steroid use because of his own personal interest and use, not because of what he learned in school. This narrative goes against the common belief that doctors are always the best people to give advice about PIEDs. Instead, the advisor shows how the community fills an important gap. As seen in the quote above, he stands by learning on your own. This point not only defends self-taught learning but also shows that the knowledge people in these groups share with each other, plays a key role in staying safe. Rather than calling these practices untrustworthy or dangerous, the advisor pushes for seeing them as real, useful ways to deal with the lack of proper advice from health professionals.

Finally, building on this discussion, Underwood (2025) argues that any meaningful harm-reduction strategy must begin by recognising and even partnering with the decades old, community-driven efforts to mitigate PIED-related risks. Rather than starting from a "blank slate" over and over again, professionals need to engage directly with people who use PIEDs, appreciating their emic definitions of risk, which are always relative to perceived benefits and embedded in shared cultural norms. Furthermore, this means overcoming mutual mistrust as users often view academics and clinicians as overly alarmist or uninformed. While professionals may dismiss these knowledge sharing practices or label them as "broscience" and unscientific, she argues

that both sides can learn from one another. Underwood lastly states that an effective collaboration will depend on understanding how inside perspectives on harm differ from traditional risk models that are more objective, when crafting practical, context-sensitive harm-reduction interventions (Underwood, 2025).

This perspective not only captures the trends we observed during our study but also highlights a somewhat needed shift in recognizing experienced users, who we termed "connoisseurs", as legitimate experts whose practice-based knowledge is important. Given that most PIEDs are illegal in Denmark, users keep their knowledge and experiences hidden for fear of legal trouble and stigma. At the same time, it's precisely this underground expertise that could potentially be needed to inform better prevention and treatment, within these environments where the voices of the peers are stronger than medical professionals. Looking ahead on how future research could integrate these connoisseurs' perspectives into the strategies of prevention and treatment programs in a Danish context, we asked Anders Nedegaard. He holds a PhD in muscle biology from the University of Copenhagen and is self-styled as "*Denmark's muscle geek*". He states the following, when asked about the hypothetical question on whether the practical experience-based knowledge could be used constructively in future scientific research, in a Danish context:

"There is clearly a kind of hands-on craft knowledge in that environment, with knowledge that is not born of scientific trials, but if we want to use it in a healthcare context with a clear conscience, we have to subject it to clinical testing."
(Anders Nedergaard, Interview 8, Appendix 1)

Nedergaard further elaborates on the persistent challenges surrounding hands-on, community-generated knowledge by highlighting the absence of officially recognized treatments for conditions related to PIED use. One example is the practice of post-cycle therapy (PCT). As Nedergaard notes, there are currently no specific, evidence-based protocols anywhere in the world for treating injuries or physiological disruptions caused by AAS withdrawal. This gap in the medical literature means that, while user-communities have developed practical and often

effective methods, these are rarely taken seriously in clinical contexts. The lack of formal validation makes it extraordinarily difficult to secure funding, ethical approval, or institutional support for investigating such community-derived strategies.

These challenges also became visible in a pilot study led by Caroline Kistorp, where a rigid PCT protocol was trialed with steroid users. According to Nedergaard, the protocol not only failed to reflect the nuanced, practice-based knowledge prevalent in user and academic communities. It actively conflicted with it. The study's reliance on a complex pharmaceutical regime, involving up to four different medicinal products, raised serious concerns within the communities. So pronounced was the mismatch between the protocol and lived experience, that some connoisseurs within the field cautioned others against participation. They argued that individuals might fare worse under the study's structure than by following their own, experience-informed approaches. This example illustrates the questions of excluding insider perspectives from the design and implementation of interventions. It also raises a critical question: Could more inclusive, collaborative approaches, such as Living Lab Deployments, co-run by experienced users and health professionals, help bridge this gap?

Final remarks on the field.

As a final remark, we would like to make a brief comment on the people that we have encountered in the field, and the importance of not reducing them to simple uninformed and lesser people. The people connected to PIEDs, illegal markets, and substance abuse are not those you would usually associate with the higher echelons of society. During our study, we frequently encountered common prejudices about people in our field in conversations with friends, family, and colleagues. The perception that the people we are dealing with consist mainly of individuals from a low socio-economic and educational background, is not a holistic view of, especially, the phenomenon of PIED use. We have encountered a surprisingly diverse field where people from all walks of life come together. There, of course, exists a predominance of people who represent the lower socioeconomic part of society, especially those who work in vocational industries. But most of these people would be considered middle-class in Denmark, and among them we encountered others from all walks of life. Concerning education, the number of people with higher education was surprising. Many of the sellers had university educations and worked

normal jobs as engineers or programmers. This also applies to the age of the common user, where we perceive PIED use as a practice that happens across all ages, from teenagers to retirees. Combining this, we generally had the experience that the people in these groups are well-reflected and represent a broad range of socio-economic and educational backgrounds, contrary to many of the common conceptions of them.

We mention this because we have experienced that this view is harmful to the preventative efforts that should be made regarding PIED use. The perception of these people as "just stupid" or "nutjobs" makes it easy to dismiss the phenomenon as something common in working-class communities. What we experienced instead, is a group of people who make decisions they believe are well-informed, safe, and to an extent innovative. Many of them believe that the use of PIEDs will soon become legal, and that Denmark is well behind other countries in utilizing them. Therefore, these people should be taken seriously, as we have discussed in our section on "bro-science". Taking these people seriously also means taking the problem seriously and thereby being able to engage better with people who engage in unregulated and hazardous PIED use.

Finally, considering Facebook as the main platform for our fieldwork, it became clear how central the site is in shaping the social world of PIED use. Unlike closed platforms like Telegram or Signal, Facebook's openness and searchability makes it easy for users to find communities, ask questions, and share experiences. This community-seeking effect means that even casual curiosity can quickly lead users into networks where PIED use is normalized and discussed in detail. Users correct each other, share harm-reduction advice, and debate protocols in ways that make the space feel both social and informative. As experienced by ourselves, being more exposed over time, can potentially create a feedback loop, transforming the use of PIEDs into something that feels less like a hidden habit and more like a widely-shared lifestyle, or identity within these communities.

Conclusion

This study has explored how digital communities in Denmark shape the perception, normalization, and advisory discourse around PIEDs. Through netnographic observation and interviews in the field, we found that these digital communities have created discursive frames around trust, care, and alternative healthcare. Our findings reveal that this social world is not merely a transactional market, but also a space where value, norms, and practices are perpetuated. Participants do not only seek PIEDs, they seek validation, information, and a network of peers. The affordances of social media, especially Facebook's group infrastructure, facilitate this by offering both visibility and anonymity. Sellers and buyers navigate a spectrum of anonymity, trust-building strategies, and engage in complex identity negotiations. Taken together, these dynamics enable users to co-construct norms and practices that increasingly legitimize PIED use.

The theoretical framework of symbolic interactionism was utilized to structure the way we understand this community as an emergent social world, where meaning is constantly negotiated through language, symbolism, and interaction. These negotiations, whether in group posts, private chats, or visual cues such as emojis, reveal how digital environment's mediate identity, credibility, and risk mitigation. Meanwhile, the concept of affordances helped us recognize how the structure of the platforms themselves subtly enables and shapes certain user behaviour, making some actions easier and others less visible. Importantly, we observed that the digital transformation regarding these affordances in the PIED markets lowered the barrier to access compared to the traditional communities.

In conclusion, the normalization of PIEDs within digital subcultures reflects broader changes in how health, self-medication, and trust are conceptualized in a digital community. As traditional gatekeepers of health knowledge lose influence to decentralized, peer-driven communities, it becomes crucial to understand the sociotechnical dynamics that drive these shifts. Throughout our fieldwork, we have deliberately maintained a stance of reflexive neutrality, abstaining from moralizing or prescribing what is right or wrong. As techno-anthropologists, the aim of our work has been to contribute to the understanding of the evolving PIED communities in Denmark, but also to invite future research and policy discussions around regulation, harm reduction, and the nature of health expertise in the digital age.

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