



SMARTBIOFINISH FIELD STUDY & FIRST RESULTS ON CONSUMERS PRODUCT CARE INTENTIONS

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CONTENT

1. SBF FIELD STUDY (QUALITATIVE)
2. PRODUCT CARE QUALITATIVE STUDY
3. ANTROPOMORPHISM EXPERIMENTAL STUDY

SBF Field Study



INTRODUCTION

CONSUMER PERCEPTIONS OF BIO-BASED COATINGS AND CHEMICAL AWARENESS IN RAIN JACKETS

Per- and polyfluoroalkyl substances (PFAS)



*“PFAS are referred to as 'forever chemicals'. Regardless of their ecological or toxicological properties, **extremely persistent** substances pose a threat to the environment simply because they are irrecoverable and lead to **environmental pollution lasting decades to centuries and eventually longer.**”*



REACH 2024 - TIGHTER RULES, NEW RISKS, URGENT ACTION

REACH = Registration, Evaluation, Authorisation and Restriction of Chemicals

- Adopted in 2006, REACH is the EU's key chemical safety law.
- Updated in 2024, includes stricter rules for registration, new substance classes and major restrictions like the **proposed PFAS ban**.

Key Objectives:

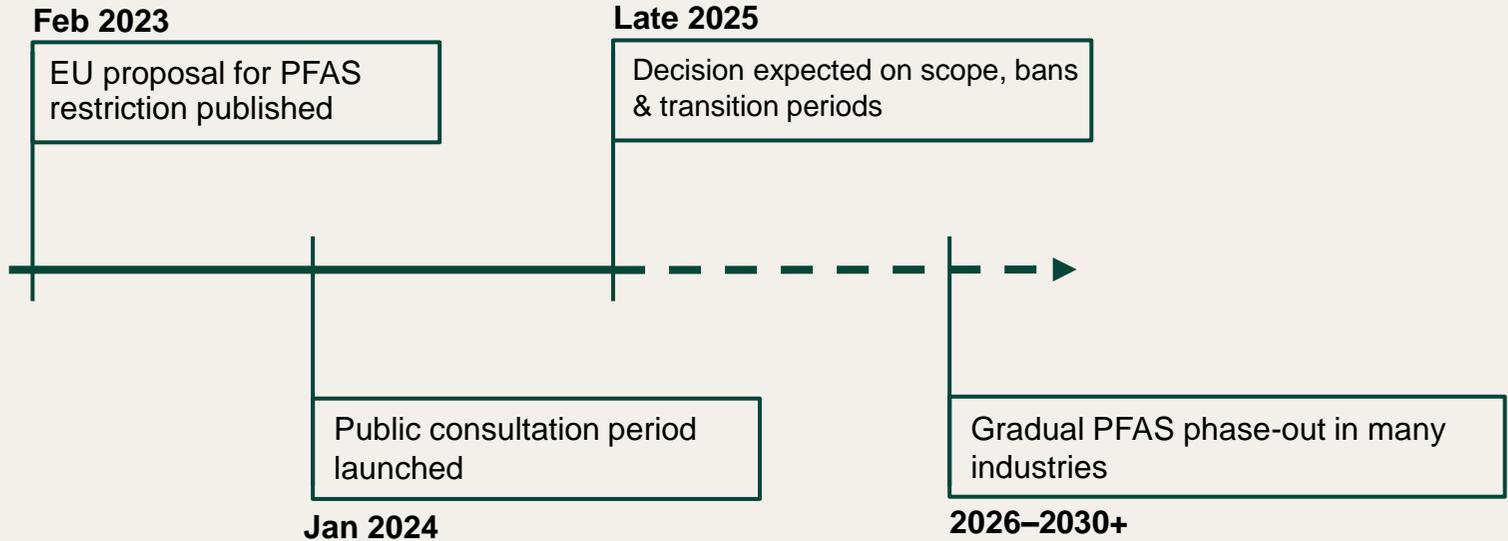
- Improve protection of human health and the environment
- Promote alternative methods for hazard assessment (e.g., reduce animal testing)
- Enhance competitiveness and innovation in the EU chemicals industry

Impact of REACH 2024

- Regulatory pressure on PFAS use across key industries
- Acceleration of PFAS-free innovation
- Early action reduces liability risks and strengthens brand reputation



PFAS UNDER REACH - IMPACT & TIMELINE



→ A PFAS ban under REACH is coming. Companies must act now to assess use, find alternatives, and ensure compliance.

SMARTBIOFINISH: ELIMINATING PFAS – DEVELOPING THE NEXT GENERATION OF TEXTILE FINISHES

Motivation PFAS Challenge

The upcoming EU REACH restriction will ban many PFAS uses in textiles
→ There is an urgent need for safer, sustainable alternatives

Solution SmartBioFinish

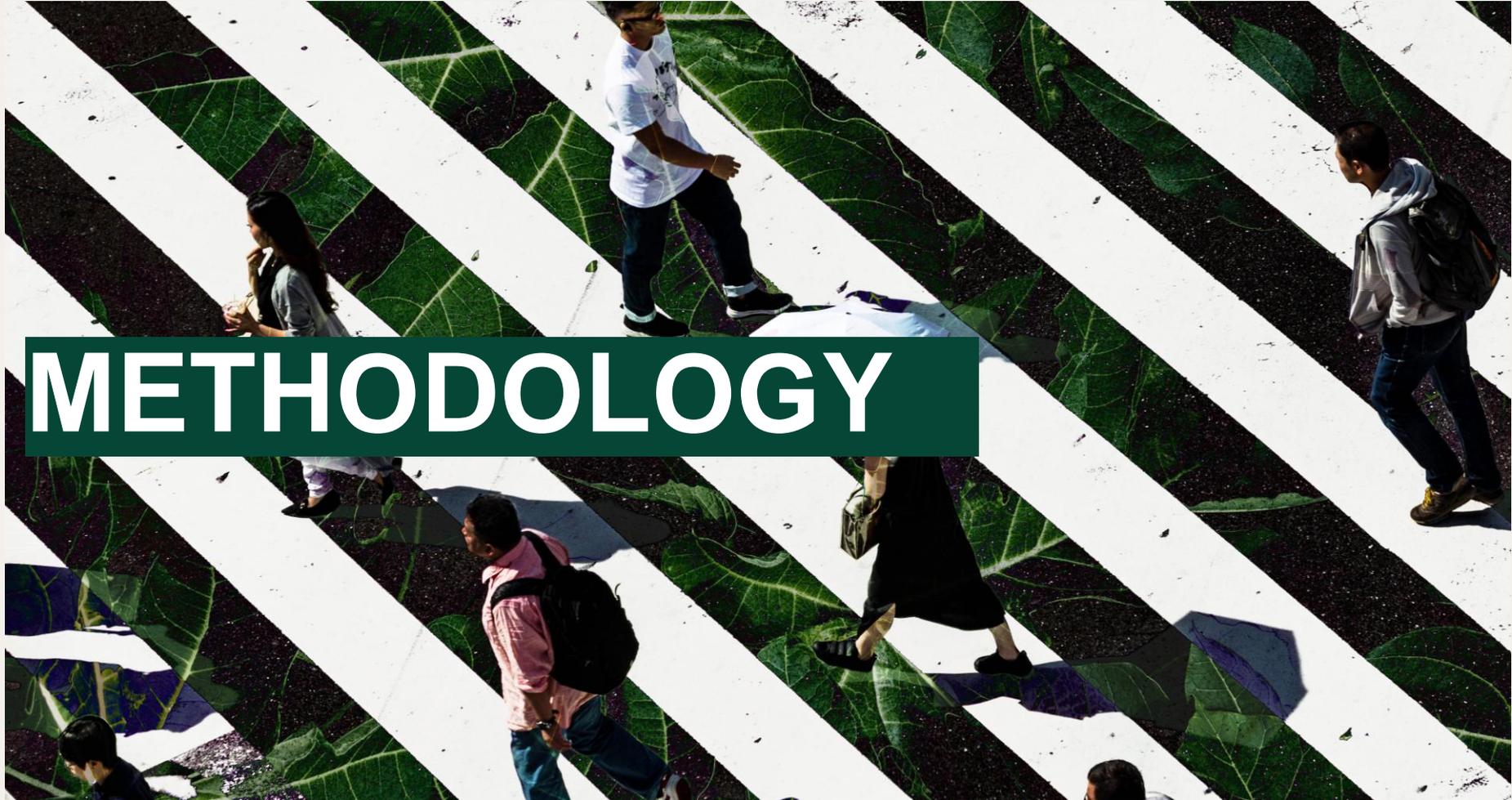
Develops **100%** bio-based water- and oil-repellent textile finishes
→ A bio-based and scalable alternative to PFAS

Application Use Case

Performance is validated in two real-world applications:

1. Sports textiles
2. Personal protective equipment

→ Demonstrates industrial relevance and regulatory readiness



METHODOLOGY

FIELD STUDY ADIDAS STORE BERLIN MARCH 2025 (N=66)

Open-ended Questions:

- When considering the purchase of a rain jacket, what is most important to you?
- Consider the coating of the rain jacket you just saw: it is made from a bio-based source instead of traditional synthetic options, what requirements would you have to use a bio-based source instead?
- What are your general thoughts about bio-based coatings for a rain jacket?
- What comes to your mind when you hear the words “PFA or PFC chemistry”?



An aerial photograph of a pedestrian crossing. The crossing is marked with white diagonal stripes on a dark asphalt surface. The background of the image is a vibrant green pattern of large, detailed leaves, overlaid on a dark, starry space-like background. Several people are walking across the crossing in various directions. A dark green horizontal bar is positioned across the middle of the image, containing the word 'RESULTS' in white, bold, sans-serif capital letters.

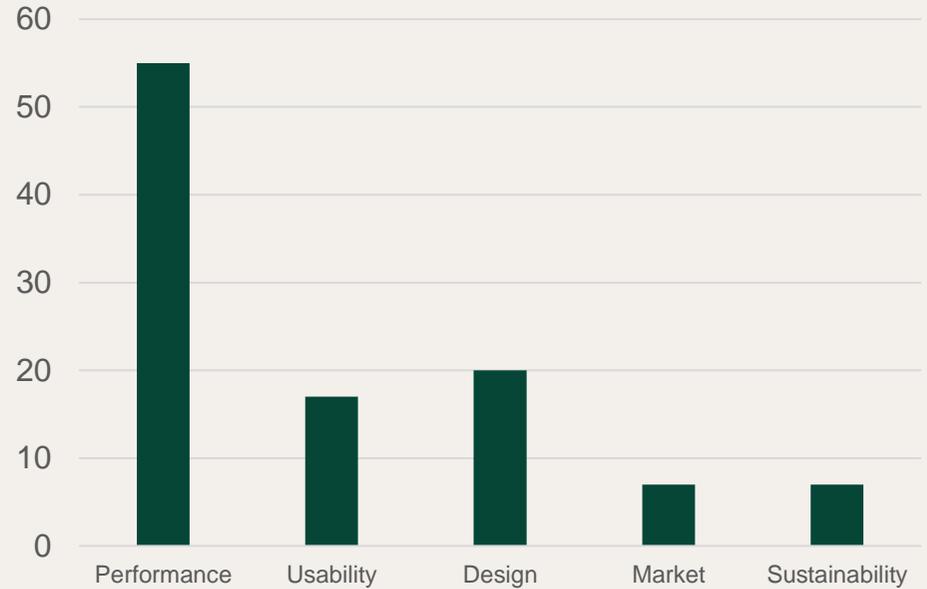
RESULTS

Q1: KEY PRIORITIES WHEN PURCHASING A RAIN JACKE

When considering the purchase of a rain jacket, what is most important to you?

Top Priorities:

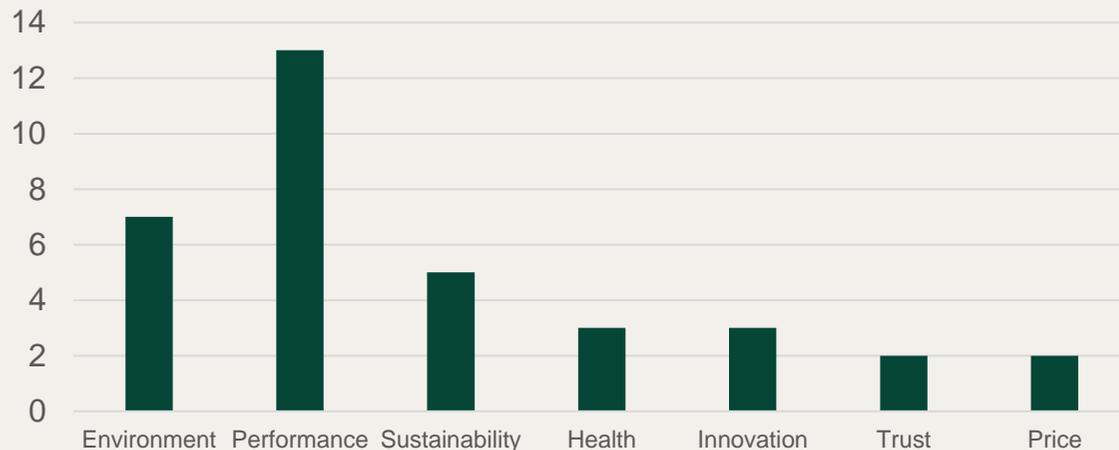
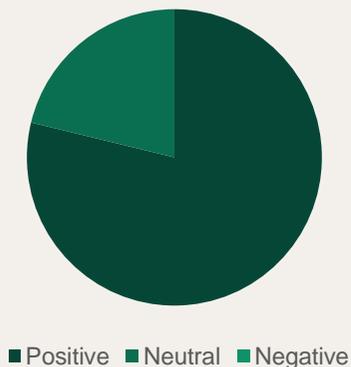
- **Performance**
 - Waterproof, Breathability, Insulation, Lightweight, Windproof, Quality
- **Usability**
 - Comfort, Fit, Packability, Layering, Zippers
- **Design**
 - Look, Color, Material
- **Sustainability**
 - Renewable Materials, Environment
- **Market Aspects**
 - Brand, Price



Q2: FIRST REACTIONS TO BIO-BASED COATINGS

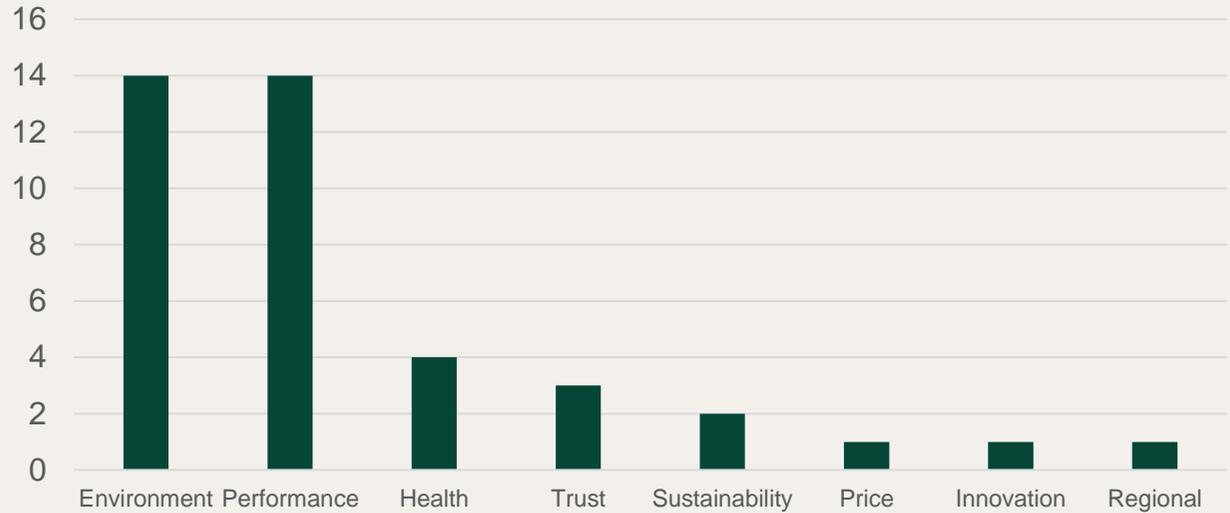
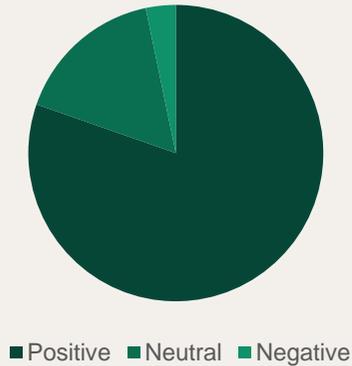
Consider the coating of the rain jacket you just saw: it is made from a bio-based source instead of traditional synthetic options.

How would you feel about a bio-based coating?



Q3: GENERAL THOUGHTS ABOUT BIO-BASED COATINGS

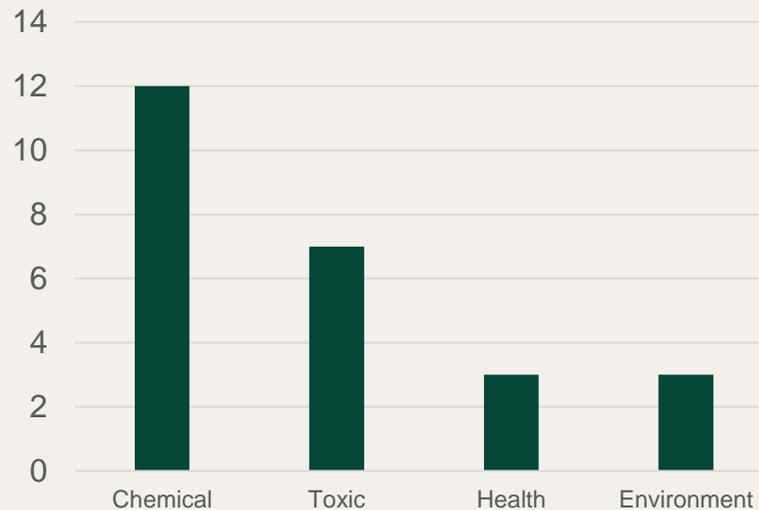
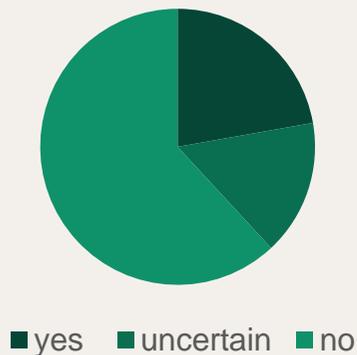
What are your general thoughts about bio-based coatings for a rain jacket?



Q4: ASSOCIATIONS WITH PFA/PFC CHEMISTRY

What comes to your mind when you hear the words “PFA or PFC chemistry”?

Knowledge of PFA/PFC



Product Care



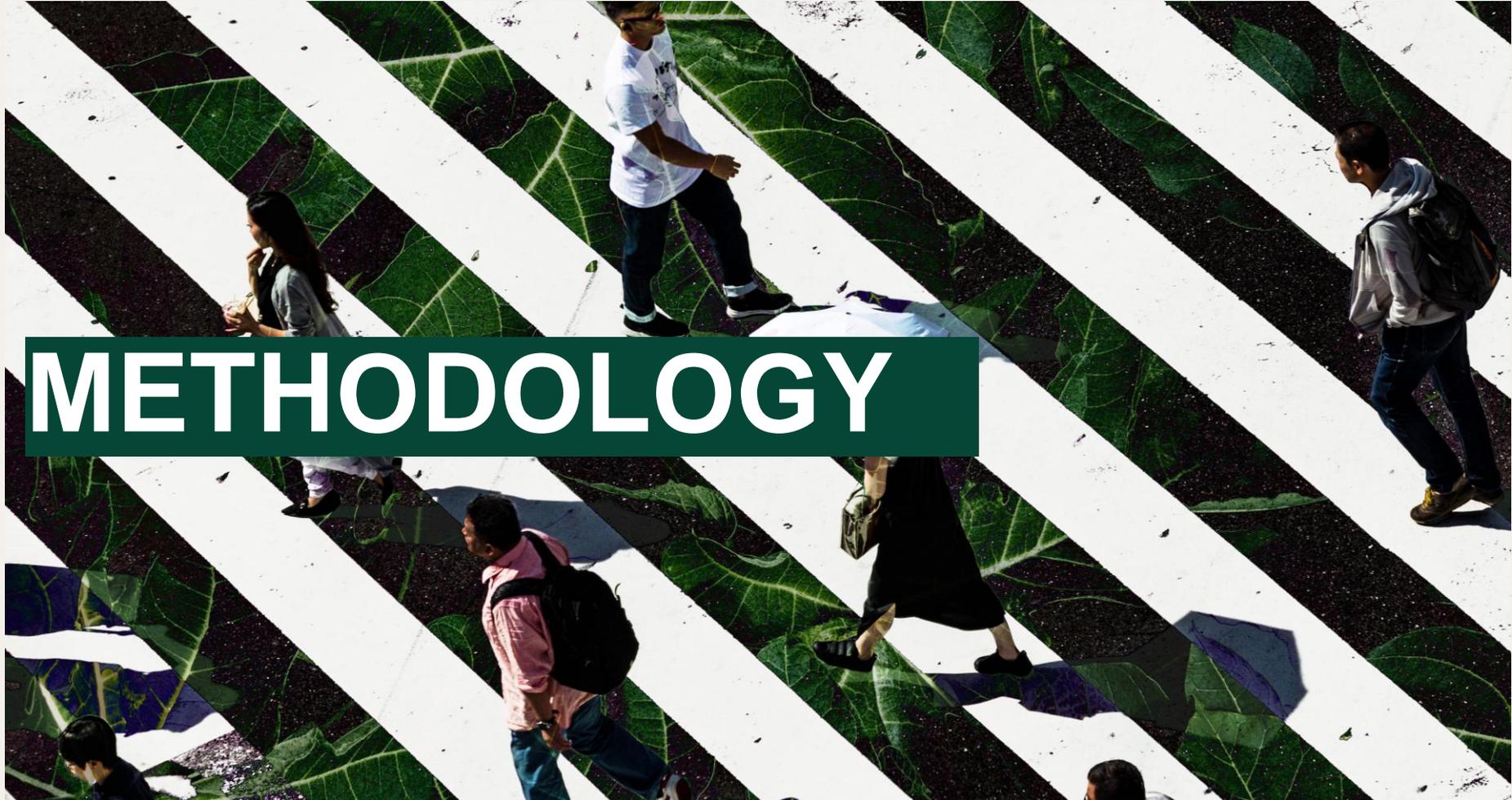
INTRODUCTION

PRODUCT CARE MATTERS: EXTENDING CLOTHING LIFE MAKES A DIFFERENCE



- Clothing **accounts for 5 %** of the UK's total **annual carbon and water footprints**
 - The average household owns about £4,000 worth of clothes, yet **30 % of these items are unworn** for at least a year
- **Extending the life of clothes by 9 months** reduces carbon, water, and waste footprints by **20–30%**

Extending clothing life is the biggest lever for impact reduction



METHODOLOGY

OUR STUDY FOLLOWS A QUALITATIVE APPROACH WITH OPEN-ENDED QUESTIONS

1. *Think about the last time you noticed care instructions on a garment (like a label or a tag). **How relevant did that information feel to you at that moment — and why?***
 2. *Can you remember a time when you chose **not to follow** a garment's care instructions on purpose (e.g., ignored the "hand wash" label or used a dryer anyway)? **What made you decide to do things differently?***
 3. *What would need to happen for you to think more actively about how to care for your clothes?*
 4. *Have you ever planned to care for a garment properly (e.g., follow a specific instruction), but didn't follow through? **What got in the way?***
- **n = 81, U.S. Prolific**
 - **Inductive content analysis of the data according to Gioia et al. (2013)**

An aerial photograph of a pedestrian crosswalk. The crosswalk is composed of white diagonal stripes on a dark asphalt surface. The entire scene is overlaid with a large, vibrant green leaf pattern, likely a tobacco leaf, which is oriented diagonally to match the stripes. Several people are walking across the crosswalk in various directions. A dark green horizontal bar is superimposed over the center of the image, containing the word "RESULTS" in white, bold, sans-serif capital letters.

RESULTS

Q1: FELT RELEVANCE OF CARE INSTRUCTIONS ON A GARMENT

relevant for new, delicate, expensive, or sentimental garments

relevant due to allergies or special fabric needs

relevant when wanting to avoid damage, shrinkage, or color fading

irrelevant for everyday or basic items

irrelevant due to established laundry routines or perceived insignificance



Perceived value and risk: Instructions matter for valued or risky items

Functional utility: Instructions are used when unsure or facing unique situations

Habit and Routine: Instructions are less relevant

Q2: REASONS TO NOT FOLLOW THE CARE INSTRUCTIONS

ignored instructions due to convenience, time pressure, or laziness

assumed fabric could withstand alternative treatment

prioritized speed or ease over caution

ignored due to lack of perceived importance or previous positive outcomes

ignored due to lack of resources (e.g., no hand-wash facilities)



Convenience vs. Caution: Decisions often favor ease over strict adherence

Risk Assessment: Willingness to gamble based on prior experience or garment type

Resource Constraints: Lack of time or facilities influences choices

Q3: TRIGGER TO THINK MORE ABOUT CARE FOR YOUR CLOTHES

experiencing damage or negative outcomes (shrinkage, fading, etc.)

investing in higher-quality or sentimental garments

clearer, more intuitive instructions or reminders

education about fabric care or environmental impact

noticing visible benefits of proper care (longevity, appearance)



Learning from consequences: Negative experiences drive future caution

Value and investment: Higher stakes increase motivation

Need for support: Simpler labels or digital aids could help

Q4: REASONS TO NOT FOLLOW THE PLAN TO CARE FOR A GARMENT PROPERLY

convenience, time pressure, or forgetfulness

overwhelmed by workload or life circumstances

habitual routines override intentions

lack of facilities or appropriate resources

sometimes, care is maintained for valued items



Intention-Action gap: Good intentions are undermined by real-life constraints

Habitual shortcuts: Established routines often take precedence

Selective diligence: Care is more likely for cherished garments



- *Relevance and adherence to garment care instructions are highly situational*
- *People are most attentive when the stakes are high (e.g., expensive, new, or sentimental garments)*
- *Tend to disregard instructions for convenience, especially when they believe the risk is low*
- *Negative experiences and increased garment value are strong motivators for better care*
- *Real-life constraints often prevent follow-through, highlighting the gap between intention and action*

Anthropomorphism

the attribution of human traits and characteristics to non-human subjects; e. g., intentionality, emotion, and cognition

"Your bag wants self-care, too."

- GAP

"Even if you haven't taken particularly good care of your shoes, it is possible to breathe new life into them with a little elbow grease." - Nike

"Bring it to life every day. The more you wear your Hermes jewelry, the less care it needs!"

- Hermes

"If you've got a brand new Mitsubishi sitting in your driveway, it is recommended you use Mitsubishi Genuine Accessories"

- Mitsubishi

"Once you no longer wear your clothes, do not throw them away, you can bring them to our stores and give them a new life."

- Inditex

EXPERIMENT: THE POWER OF ANTHROPOMORPHIC CARE INSTRUCTIONS

How Human-Like Language Increases Sustainable Product Care

Participants & Design:

- 401 U.S.-based participants (average age: 42 years, 47.6% female)
- Design: 2-cell between participants experiment (Baseline vs. Anthropomorphized)
- Scenario: Shopping for a sustainable rain jacket with different care instructions

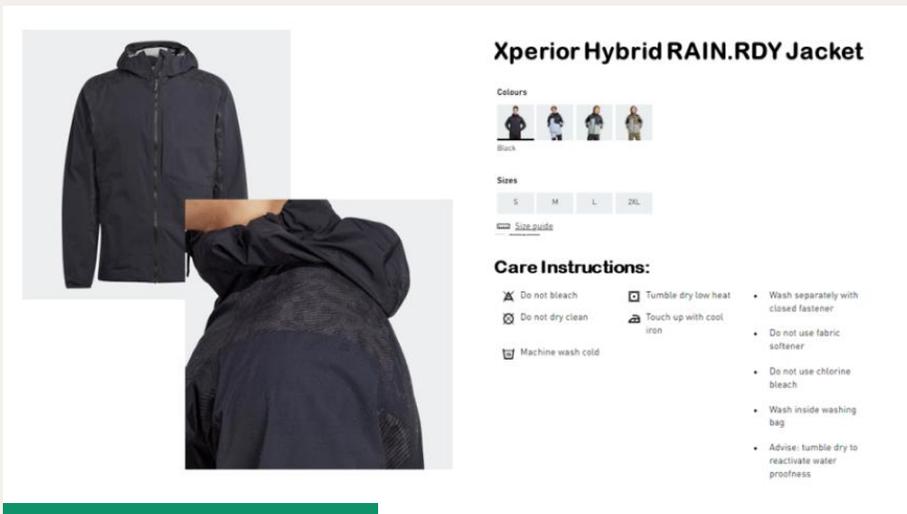
Baseline

Neutral headline ("Care Instructions") and impersonal instructions ("Machine wash cold")

Anthropomorphized

Humanized instructions in first-person ("Just like yourself, I require regular care"; "Machine wash me cold").

EXPERIMENT: STIMULI



Xperior Hybrid RAIN.RDY Jacket

Colours

Black

Sizes

S M L XL

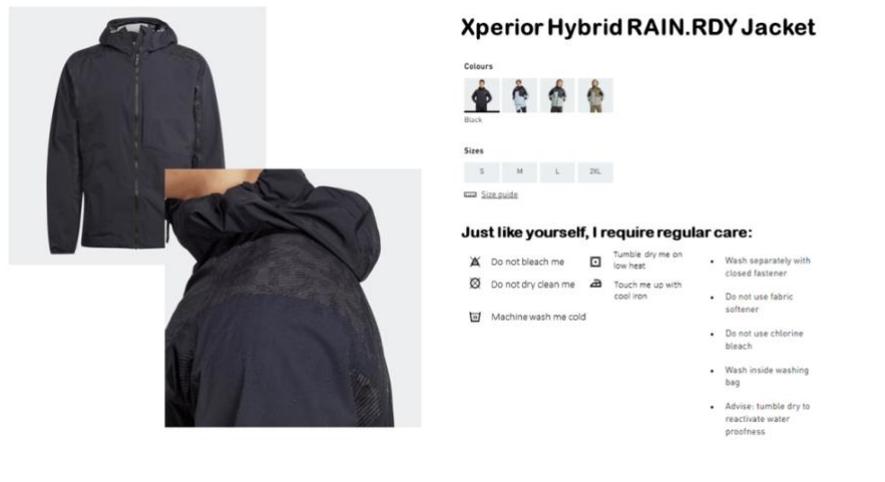
[Size guide](#)

Care Instructions:

- Do not bleach
- Do not dry clean
- Machine wash cold
- Tumble dry low heat
- Touch up with cool iron
- Wash separately with closed fastener
- Do not use fabric softener
- Do not use chlorine bleach
- Wash inside washing bag
- Advise: tumble dry to reactivate water proofness

Baseline

Antropomorphism



Xperior Hybrid RAIN.RDY Jacket

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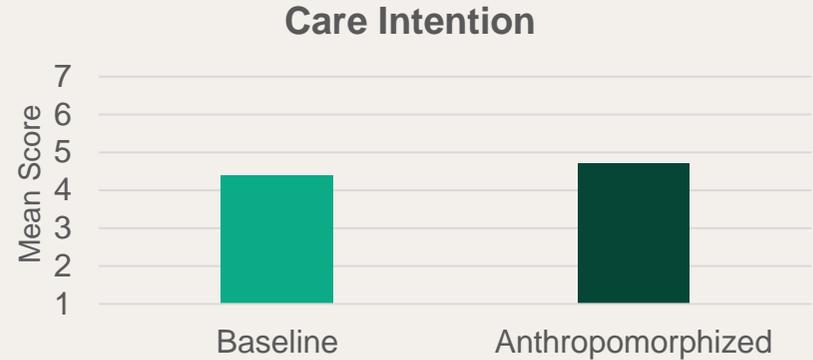
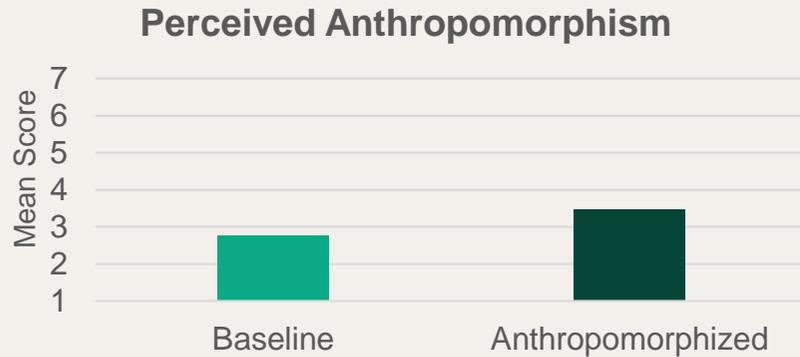
S M L XL

[Size guide](#)

Just like yourself, I require regular care:

- Do not bleach me
- Do not dry clean me
- Machine wash me cold
- Tumble dry me on low heat
- Touch me up with cool iron
- Wash separately with closed fastener
- Do not use fabric softener
- Do not use chlorine bleach
- Wash inside washing bag
- Advise: tumble dry to reactivate water proofness

EXPERIMENT FINDINGS: HUMANIZING INSTRUCTIONS WORKS



A one-way ANOVA tested whether anthropomorphized care instructions influenced participants' intention to care for the product. The analysis revealed a statistically significant main effect of condition[1], $F(1, 399) = 3.86$, $p = .050$, $\eta^2 = .010$. Participants in the anthropomorphized condition reported higher care intentions ($M = 4.69$, $SD = 1.68$) than those in the baseline condition ($M = 4.35$, $SD = 1.80$).

→ Anthropomorphized care instructions made the product feel **significantly more human-like**

→ Participants with human-like instructions showed **higher intention to care for the jacket**

Implications of our studies

KEY IMPLICATIONS FOR BRANDS & MANAGERS

For Apparel Brands & Retailers

- **Leverage Anthropomorphic Messaging:**

Incorporate human-like language in care instructions (e.g., “Wash me gently”).

- **Emphasize Value to Trigger Care:**

Highlight aspects like quality, uniqueness, potential in marketing.

- **Make Care Easy and Intuitive:**

Redesign clear labels and QR codes linking to care tutorials remove barriers.



For Sustainability & Innovation Managers

- **Educate on Bio-Based Benefits Without Compromising Performance:**

Frame them as performance-equal, or superior alternatives to traditional PFAS-based options.

- **Clarify PFAS Risks Transparently:**

Use transparent communication why PFAS-free innovation matters without technical jargon.



KEY IMPLICATIONS FOR DESIGN & REGULATION

For Product Designers

- **Design for Ease of Care:**

Choose materials and construction that tolerate diverse care routines (e.g., machine-washable items)

- **Build for Longevity – Not Just Durability:**

Align care requirements with everyday habits. Garments with realistic, flexible care needs will be better maintained and used longer.

For Policy Makers and NGOs

- **Support Communication on PFAS Regulation:**

Campaigns should link product safety and sustainability to policy context.

- **Encourage Label Innovation Standards:**

Collaborate with industry to standardize engaging, intuitive care labels, possibly incorporating sustainability nudges.



Thank your for your attention!

Please reach out for feedback and questions to:

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