Original Research

SAGE Open
July-September 2025: 1–14

DOI: 10.1177/21582440251351185
journals.sagepub.com/home/sgo
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Self-Determination as a Mediator Between Mindfulness and Perfectionism in Theory and Practice

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Abstract

Mindfulness-based interventions (MBIs) have been surging as an alternative to cognitive-behavioural therapy for perfectionism. Despite promising results, there are practical and theoretical concerns regarding high resistance from perfectionists towards developing mindfulness related capabilities. Self-Determination Motivation could provide a pathway to circumvent this problem by mediating the relationship between mindfulness and multidimensional perfectionism. Ninety-three university students filled a questionnaire containing mindfulness, perfectionism and motivation measures. Thirteen participants were then included in an 8-week MBI. Intrinsic motivation mediated the effect between mindfulness and perfectionist concerns (indirect effect = −0.09). Perfectionist concerns and strivings were both reduced post-intervention ($p = .002$). There was also a significant intragroup increase in mindfulness ($p \leqslant .001$), although there were no motivational changes. Current change mechanisms underlying MBI effectiveness do not support this approach as presenting unique advantages over other cognitive-behavioural approaches. Implementing explicit motivational change into MBI interventions could provide a pathway to differentiating MBIs from other alternatives.

Keywords

mindfulness, perfectionism, intervention, self-determination theory, University students

Introduction

Clinical perfectionism is a transdiagnostic construct characterised by an overreliance on achieving goals to satisfy self-worth needs, despite negative consequences, and is often maintained by processes such as excessive self-criticism, performance anxiety, dichotomous thinking (success/failure), devaluation, among others (Shafran et al., 2002). This construct is intended to reflect how perfectionism tends to present itself in clinical practice, and not the whole of perfectionism as a construct (Shafran et al., 2023). Perfectionism is a strongly debated construct that is generally agreed to be multidimensional, although the division and labelling of these dimensions is highly contentious (Stoeber, 2018). Regardless of one's viewpoint, it's undeniable that perfectionism has been consistently rising among western university students for decades and has been associated with psychological conditions such as depression, anxiety and eating disorders (Curran & Hill, 2019), and it might even contribute to non-psychological health issues through mechanisms such as lowered engagement with preventive health behaviours (Williams & Cropley, 2014).

One other maintenance factor in clinical perfectionism is the fact that not all outcomes related to perfectionist are negative (Shafran et al., 2002). This fact is easier to understand when considering perfectionism as a multidimensional construct. Previous research consistently found two major perfectionism factors: perfectionist strivings and concerns (Stoeber, 2018). Perfectionist concerns are closely related to clinical perfectionism and its associated

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Data Availability Statement included at the end of the article

outcomes, while perfectionist strivings have been predictive of positive outcomes, such as self-efficacy, although this factor is also associated with depression and eating disorders (Howell et al., 2020). The current literature related to perfectionism finds itself split in understanding how this 'adaptive' perfectionism fits into current models of behaviour. While some argue that perfectionism is a clinical construct whose positive outcomes can be understood as maintenance factors of the perfectionistic symptoms, others argue that perfectionism can be understood as a personality trait that can lead to both positive and negative outcomes, depending on various context and personal factors (Shafran et al., 2023).

Various interventions, mostly based on cognitive-behavioural therapy (CBT), have been designed to target perfectionism by introducing the patient to alternative ways of living that allow for a broader standard of self-evaluation that are more conductive to well-being (Shafran et al., 2023). Such an approach assumes the clinical perspective that the individual's self-evaluation is mostly, or exclusively, tied to their ability to attain self-imposed goals (Shafran et al., 2023), and that such a way of living is bound to lead to worsened well-being, through mechanisms such as devaluation of the goals, when they are attained, or devaluation of the self, when they are not (Shafran et al., 2002). Therefore, considerably less effort has been dedicated towards interventions that stimulate the adaptive elements of perfectionism (Suh et al., 2019). Ignoring this element of perfectionism might be problematic in light the fact that perfectionists are particularly resistant to therapeutic interventions (Flett et al., 2021). Since these 'positive' elements of perfectionism are partially responsible for its maintenance (Shafran et al., 2023), it is quite possible that perfectionists refuse or resist treatment due to fear of missing out on these benefits.

A recent alternative to CBT interventions for perfectionism that might solve this problem has been recently emerging in the form of mindfulness-based interventions (MBI). This latter approach is still considered to be within the cognitive-behavioural framework, but it differentiates itself in some key points. While CBT focuses on modifying maladaptive thoughts through cognitive restructuring and reappraisal, the mindfulness approach aims to alter the impact of negative thoughts and emotions through mindfulness, targeting maladaptive response-focused behaviours, like suppression, by stimulating non-judgemental acceptance of such experiences (Hofmann & Asmundson, 2008). In this sense, MBIs could hold an advantage over CBT by 'circumventing' the patient's fears of becoming less perfectionistic, instead providing emotion-regulation strategies that allow these individuals to maintain their mental health in light of their perfectionism (Suh et al., 2019).

Despite this theoretical rationale, the opposite has been found to be true: perfectionists are particularly resistant to MBIs (Flett et al., 2021). This contradiction isn't as surprising as it initially seems when considering the core traits of mindfulness and their relation to perfectionism. Mindfulness can be defined as 'a process of regulating attention in order to bring a quality of non-elaborative awareness to current experience and a quality of relating to one's experience within an orientation of curiosity, experiential openness, and acceptance' (Bishop et al., 2004, p. 234). It's not surprising that perfectionists, who are highly critical, tend to be hypervigilant and ruminate over performance and often experience self-devaluation, have a hard time learning mindfulness skills (Flett et al., 2021), but it can also be argued that the very act of teaching a set of skills that oppose perfectionism to a perfectionist might be missing the point of MBIs, as they are not intended to alter symptoms as much as how the individual experiences them. There is, therefore, an implication that mindfulness's positive effect on perfectionism is not straightforward. Current literature has aimed to find mechanisms that show an indirect path between increased mindfulness and reduced clinical perfectionism, such as self-compassion (e.g., Bearden et al., 2024), social connectedness (e.g., Visvalingam et al., 2023), self-efficacy (e.g., Vidic & Cherup, 2019), among others.

The relationship between mindfulness and perfectionism has yet to be fully explained (Flett et al., 2021). The present paper aims to add to our current understanding of the relationship between these constructs by including a motivational perspective of these. This can be achieved through the Self-Determination Theory (SDT), as both perfectionism and mindfulness, separately, are well understood in this theory (Donald et al., 2020; Stoeber et al., 2018).

Self-Determination Theory is an organismic theory of human behaviour and personality development composed of six sub-theories centred around how the (in)satisfaction of basic psychological needs (those being autonomy, competence, and relatedness) leads to motivation, and how such motivation leads to various life outcomes (Ryan & Deci, 2024). As such, the theory defines three main categories of motivation: (1) amotivation, defined as a lack of motivation; (2) intrinsic motivation, present in situations where the behaviour is its own reward; and (3) extrinsic motivation, a class that includes all sorts of behaviours that aren't necessarily pleasurable by themselves, but whose outcome is desirable by the individual. This last category can be further divided into four sub-categories according to how much the individual values the expected outcome (Ryan & Deci, 2017). For example, two workers in the same company might both be extrinsically motivated to do their job, but if one of them does it because the position pays well, while another works there because the company's mission and

goal aligns with their own values, this last worker will be more intrinsically motivated towards their work. As such, six regulatory styles can be defined, from most to least intrinsic: intrinsic regulation; integrated regulation; identified regulation; introjected regulation; external regulation; and non-regulation (Ryan & Deci, 2017). The first two regulatory styles are considered to be the more autonomous end of the spectrum and are associated with positive outcomes such as fulfilment and self-actualisation while identified, introjected and external regulation are more controlled forms of motivation and lead to negative outcomes such as exhaustion and burnout (Ryan & Deci, 2024).

As mentioned earlier, both perfectionism and mindfulness are well established under SDT, and, more specifically, mapped onto the motivational spectrum. Starting with mindfulness, this trait was found to be consistently related to the intrinsic end of the spectrum, particularly intrinsic and integrated regulation, while amotivation and extrinsic forms of motivation tend to show a neutral or negative correlation with mindfulness (Donald et al., 2020), although this relationship doesn't seem to be as clear in intervention settings (e.g., Oberleiter et al., 2022). Despite there being some discussion around intervention effectiveness when it comes to increasing intrinsic motivation and decreasing amotivation (Li et al., 2023), there seems to be a consensus in the literature indicating that mindfulness and intrinsic motivation are strongly associated with each other, and both are associated with positive outcomes (Ryan et al., 2022).

Framing of perfectionism within SDT becomes easier when perfectionistic concerns and perfectionistic strivings are considered separately, as these have distinct and often opposing effects on how they drive individual action. Perfectionistic concerns are associated with more extrinsic motivational modes, that is, they encompass amotivation, external motivation and introjected motivation (Stoeber et al., 2018). When considering perfectionistic strivings, one might expect to find the opposite relationship, but reality is more complex. Although consistent relationships are indeed found between perfectionistic strivings and more autonomous motivations (identified, integrated, and intrinsic), this factor encompasses the entire motivational spectrum, except for amotivation, showing weak but present relationships with less autonomous motivations (Stoeber et al., 2018). Perfectionism can be further understood under SDT by framing the development of this trait as a compensatory mechanism used when certain basic psychological needs are not met, as seems to be the case for children with overprotective parents who don't foster autonomy and competence (Casale et al., 2023).

Beyond basic psychological needs, Cognitive Evaluation Theory, another sub-theory of SDT, posits that contextual and social factors can further enhance or diminish intrinsic motivation, depending on how they are perceived (Ryan & Deci, 2024). For example, a student that gets an average grade on a test and is told by a teacher that they could get a better grade if they studied harder can interpret this event in one of two ways: either this person truly believes in the student's abilities and believes they haven't achieved their full potential (enhancing intrinsic motivation), or the teacher thinks the student is being lazy (leading to reduced motivation). This perspective fits particularly well under The Social Disconnection Model of Perfectionism (Hewitt et al., 2018), which posits that the main mechanism by which perfectionism experience negative outcomes is their inability to play well with others. In the SDT framework, it is entirely possible that the perfectionist tends to see all feedback as an inhibitor of intrinsic motivation, although no such investigation has established whether this is case. Such a hypothesis highlights the possibility that mindfulness could potentiate healthy experiencing of perfectionism, by buffering the negative impact of feedback on the perfectionist (Olafsen et al., 2021).

In sum, maladaptive perfectionism appears to have an effect opposite to mindfulness, primarily increasing forms of extrinsic motivation, while adaptive perfectionism leads to an increase in all forms of motivation, having a more substantial effect on autonomous motivation, similar to the effect of mindfulness.

Considering how these constructs map onto the motivational spectrum, it's quite possible that mindfulness's effect on perfectionism could be limited to its maladaptive element, allowing for MBIs that preserve the elements of perfectionism valued by perfectionists who are hesitant to engage in these interventions. Current literature has yet to fully explain why perfectionists are so resistant to MBIs (Flett et al., 2021), and this is, in part, because the mechanisms underlying these interventions have yet to be thoroughly explored (Cásedas et al., 2024). By understanding how motivational modes fit into the relationship between mindfulness and perfectionism, both cross-sectionally and in an intervention setting, future MBIs may adopt new techniques so as to cater MBI interventions to perfectionists' needs, by developing strategies to reduce clinical perfectionism's impact on mental-health without undermining the positive motivational aspects of perfectionistic strivings, thereby improving clinical outcomes with these populations.

The present study posits that increased mindfulness will be negatively correlated to perfectionistic concerns (which is closely linked to clinical perfectionism), a correlation that will be mediated by motivation, and there will be no correlation between mindfulness and perfectionistic strivings. This study employed a bi-phasic design to investigate this mediating effect and its practical application in an intervention study.

Study 1

Hypotheses

H1: Mindfulness will be negatively correlated with Perfectionistic Concerns and will have a non-significant correlation with Perfectionistic Strivings.

H2: The relationship between Perfectionistic Concerns and mindfulness will be partially mediated by all forms of motivation.

H21: Intrinsic regulation will have a moderate negative mediation effect on this relationship.

H22: Integrated regulation will have a weak negative mediation effect on this relationship.

H23: Introjected regulation will have a very weak positive mediation effect on this relationship.

H24: External regulation will have a weak positive mediation effect on this relationship.

H25: Amotivation will have a moderate positive mediation effect on this relationship.

Method

Participants. A convenience sample of 93 university students was collected, with the only eligibility criteria for participation being enrolled in higher education during the data collection period. Additionally, due to the protocol being in Portuguese, participants had to be fluent in that language, leading to the sample being mostly composed of Portuguese and Brazilian students, although some participants were of African or non-Portuguese European nationality. The research team chose to not distribute an English version of the protocol to avoid creating 'noise' in the data, due to version differences in the instruments.

The final sample was $N = 93$ ($M_{age} = 24.37$; $SD = 7.42$). The sample includes 69 (74.2%) female participants, and 76 (81.72%) were of Portuguese nationality. Regarding meditation practices, 13 (14.00%) currently engage in some form of meditation and 31 (33.33%) had practiced meditation in the past.

Measures. *Sociodemographic Questionnaire:* Sociodemographic data were collected using a questionnaire that included information regarding gender, age, marital status, nationality, place of birth and level of education. Additionally, questions related to meditation practice, the type of meditation practiced, and its frequency were included. Finally, the questionnaire included a list of symptoms gathered from the DMS-V diagnostic criteria for Depression and asked participants to report if they had visited a therapist regarding any of the included symptoms.

Perfectionism: The Frost Multidimensional Perfectionism Scale (FMPS; Frost et al., 1990), adapted for Portuguese populations (Carmo et al., 2017), demonstrated satisfactory internal consistency ($\alpha = .85$) and temporal stability ($r = .78$; Carmo et al., 2017). The scale consists of 35 items, scored on a 5-point Likert scale from 1 (strongly disagree) to 5 (strongly agree) and has six subscales: Personal Standards (PS), Concern Over Mistakes (CoM), Doubts about Actions, Organisation, Parental Expectations and Parental Criticisms, generating an overall perfectionism score and a score for each of the subscales (Carmo et al., 2017). In this study, only the Personal Standards (PS) and Concern Over Mistakes (CM) subscales were used, as research indicates that these are good indicators of perfectionistic efforts and concerns, respectively (Howell et al., 2020). This shortened version demonstrated good reliability ($\alpha = .89$) in the present study.

The Multidimensional Perfectionism Scale (HMPS; Hewitt & Flett, 1991; adapted for the Portuguese population by Soares et al., 2003) has satisfactory internal consistency ($\alpha = .88$) and temporal stability ($r = .85$) in its Portuguese version (Soares et al., 2003). The scale consists of 45 items, scored on a 7-point Likert scale, discriminating three dimensions of perfectionism: Self-Oriented (SOP), Socially Prescribed (SPP) and Other-Oriented (OOP; Soares et al., 2003). The first two dimensions describe perfectionism felt by the individual, while OOP describes a set of externalised attitudes (Soares et al., 2003). Due to the study's objectives, items related to this last dimension were removed. This version of the scale demonstrated excellent reliability in this population ($\alpha = .92$).

Mindfulness: The Five Facet Mindfulness Questionnaire (FFMQ; Baer et al., 2006; adapted by Gregório & Gouveia, 2011) consists of 39 items, with responses scored on a 5-point Likert scale, discriminating five facets in its subscales (observing, describing, acting with awareness, non-judging, non-reacting; Gregório & Gouveia, 2011). The internal consistency of this adaptation is similar to its original version, with α ranging between .75 and .91 (Gregório & Gouveia, 2011), similar to the present study ($\alpha = .88$). This scale is validated, and there is precedent for its use in the assessment of MBCT interventions (e.g., James & Rimes, 2018).

Motivation: The Academic Motivation Scale (AMS; Vallerand et al., 1992; adapted for the Portuguese population by Guimarães & Bzuneck, 2008) consists of 29 items, scored on a Likert scale, divided into five subscales that describe the aforementioned regulation styles, with the exception of Identified Regulation, as its items failed to load onto any factor in the Portuguese population. The scale is validated for the studied population, showing α values between .73 and .82 in its validation for Portuguese university students (Ribeiro et al., 2019). With the exception of external motivation, which

obtained questionable reliability (α = .60), the results in this population resemble the Portuguese adaptation (α = .78–.86).

Data Collection and Analysis. An assessment protocol, with the measures described above, was distributed online using a snowball methodology, by sharing an access link through online forums meant for university students and asking that these participants share the protocol with their classmates or other colleagues that were enrolled in higher education at the time. All data were analysed using SPSS v.29, and mediation analysis was run through the PROCESS macro specifically and results are reported in standardised Beta.

All participants were properly informed and consented to the study. The online protocol started with a section that contained all relevant information for the study, indicating what kind of data would be collected and what steps were taken to ensure participant anonymity and two e-mail addresses to which potential participants were encouraged to send any questions before participating. Finally, participants were asked if they had read the informed consent section, and if they selected 'no', the questionnaire would immediately end.

At the end of the initial protocol, participants were asked if they would be interested in participating in phase 2, which involved a mindfulness-based intervention. Those who showed interest would be asked to provide their contact information (either phone or e-mail), so that they could receive further details. Participants of phase 2 gave additional consent to the following steps of the study, in a similar format, with the main difference being that these participants gave their consent in written form. Participants who wished to participate in phase 2, but were not selected, and participants who only wished to participate in phase 1 had all their information de-identified immediately after it was collected. Participants who were willing to participate and were selected for phase 2 only had their information de-identified after the last data collection (follow-up), so as to allow for pairing of data for the purpose of tracking individual changes across time.

Results

Correlational Analysis of Variables. The results of the correlation analysis between perfectionism and mindfulness are summarised in Table 1. Mindfulness showed a negative correlation with Concern Over Mistakes (CoM) and the general perfectionism factor of the Frost Multidimensional Perfectionism Scale (FMPS), as well as with all factors of the Hewitt and Flett Multidimensional Perfectionism Scale (HMPS). In both conceptions of perfectionism, the strongest correlation was with the maladaptive element of perfectionism, although SOP did have a significant correlation with mindfulness, contrary to what was hypothesised.

Mediation Analysis

Frost's Multidimensional Perfectionism. Before initiating the parallel analysis, it is necessary to verify if each potential mediator individually exhibits the expected effect. Starting with the direct effect between Concern Over Mistakes (PE) and Mindfulness, the presence of a significant total effect is confirmed (β = −.52; $p \leqslant .001$).

CoM has an effect on intrinsic regulation (β = −.31; $p \leqslant .050$), and intrinsic regulation has an effect on Mindfulness (β = .28; $p = .025$), while the absolute value of the direct effect of CoM on Mindfulness (β = −.42; $p \leqslant .001$) is lower than the total effect. Therefore, intrinsic motivation meets the requirements for mediation.

Table 1. Correlation Matrix Between Frost and Hewitt and Flett's Multidimensional Perfectionism and Mindfulness.

Variable	*M* (*SD*)	PS (FMPS)	CoM (FMPS)	Total (FMPS)	SOP (HMPS)	SPP (HMPS)	Total (HMPS)
PS (FMPS)	23.00 (5.38)	—					
CoM (FMPS)	24.74 (8.75)	.536**	—				
Total (FMPS)	47.74 (12.49)	.806**	.932**	—			
SOP (HMPS)	80.99 (19.22)	.763**	.589**	.742**	—		
SPP (HMPS)	49.88 (13.52)	.517**	.731**	.735**	.583**	—	
Total (HMPS)	145.43 (30.37)	.725**	.733**	.826**	.917**	.847**	—
Obs (FFMQ)	25.70 (4.78)	.284**	−.052	.086	.123	.001	.056
Desc (FFMQ)	25.42 (4.14)	.107	−.190	−.087	.004	−.244*	−.129
Act (FFMQ)	23.89 (6.71)	−.232*	−.487**	−.442**	−.217*	−.413**	−.332**
Judge (FFMQ)	25.10 (7.48)	−.327**	−.527**	−.510**	−.334**	−.675**	−.532**
Re (FFMQ)	21.01 (4.55)	−.159	−.234*	−.233*	−.237*	−.348**	−.327**
Total (FFMQ)	121.12 (18.02)	−.163	−.517**	−.432**	−.246*	−.578**	−.442**

Note. PS = personal standards; CoM = concern over mistakes; SOP = self-oriented perfectionism; SPP = socially prescribed perfectionism; Obs = observing; Desc = describing; Act = acting with awareness; Judge = nonjudgement of experience; Re = nonreactivity to inner experience.
**$p \leqslant .001$. *$p \leqslant .05$.

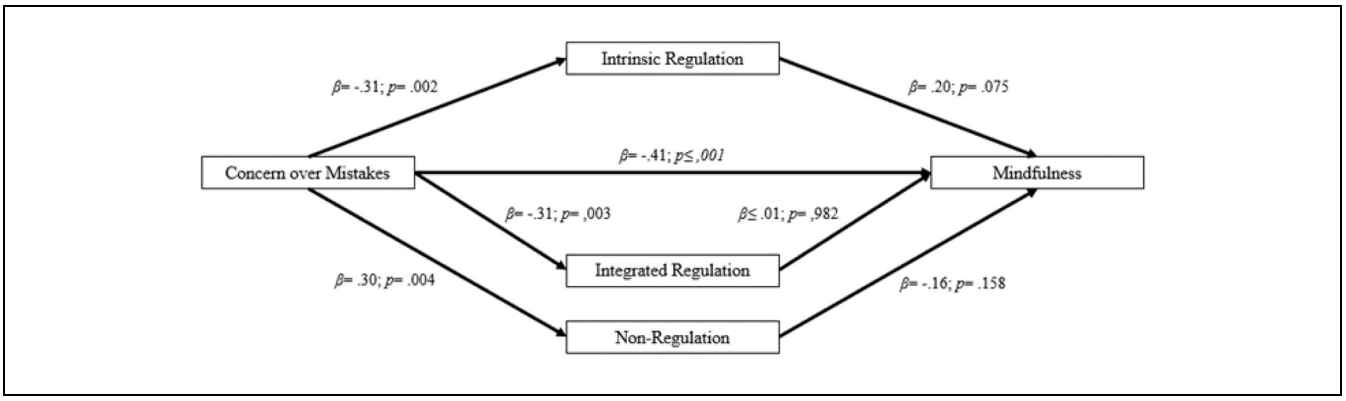

Figure 1. Parallel mediation model of concern over mistakes and mindfulness with intrinsic regulation, integrated regulation and non-regulation as mediators.

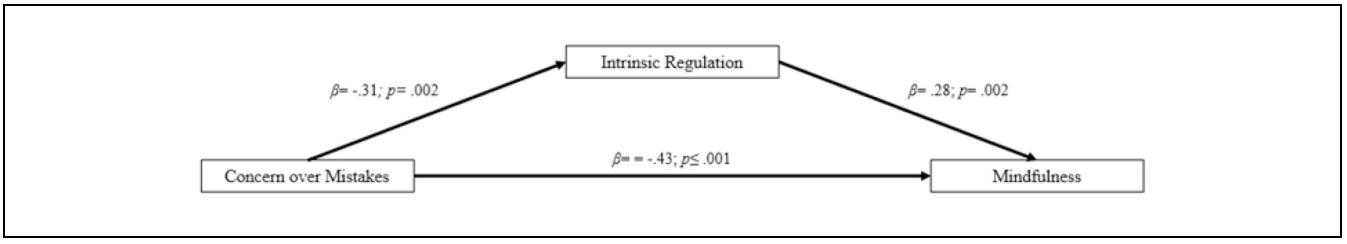

Figure 2. Simple mediation model of concern over mistakes and mindfulness with intrinsic regulation as mediator.

CoM has an effect on integrated regulation ($\beta = -.31$; $p \leqslant .050$), and an effect of integrated regulation on Mindfulness is also confirmed ($\beta = .19$; $p = .047$). The direct effect of CoM on Mindfulness ($\beta = -.46$; $p \leqslant .001$) is lower than the total effect, making this variable eligible as a potential mediator.

The effect of CoM on introjected regulation is significant ($\beta = .23$; $p \leqslant .050$), but the same is not true for the effect of this regulation on Mindfulness ($\beta = .04$; $p = .667$), so this factor is excluded from the mediation analysis.

The effect of CoM on external regulation is significant ($\beta = .22$; $p \leqslant .050$), but the same is not true for the effect of this regulation on Mindfulness ($\beta = -.18$; $p = .053$). Therefore, external regulation is also not eligible as a mediator.

CoM had a significant effect on non-regulation ($\beta = .30$; $p \leqslant .050$), and amotivation also has a significant effect on Mindfulness ($\beta = -.26$; $p \leqslant .050$). The absolute value of the direct effect of CoM on Mindfulness ($\beta = -.43$; $p \leqslant .001$) is lower than the direct effect, allowing amotivation to be considered as a potential mediator.

The parallel mediation model is depicted in Figure 1. In this model, no factor retained a significant mediating effect, although intrinsic regulation was the mediator that showed the best fit with the model.

The unifactorial mediation model incorporating intrinsic regulation is described in Figure 2. In this model, only intrinsic motivation was kept as a mediator because it has both the largest effect, as indicated by its β, and, simultaneously, has the most significant effect (p). However, all three mediators showed a statistically significant effect when considered individually. The index of mediation for this model is −.09.

Hewitt and Flett's Multidimensional Perfectionism. In Hewitt and Flett's (1991) conception of perfectionism, both the Self-Oriented Perfectionism (SOP) and Socially Prescribed Perfectionism (SPP) factors significantly associate with clinical perfectionism symptoms. However, SPP shows a more significant association with maladaptive elements of perfectionism, while SOP exhibits characteristics more indicative of perfectionistic efforts (Flett & Hewitt, 2002). Therefore, before examining potential mediators between it and Mindfulness, it's important to

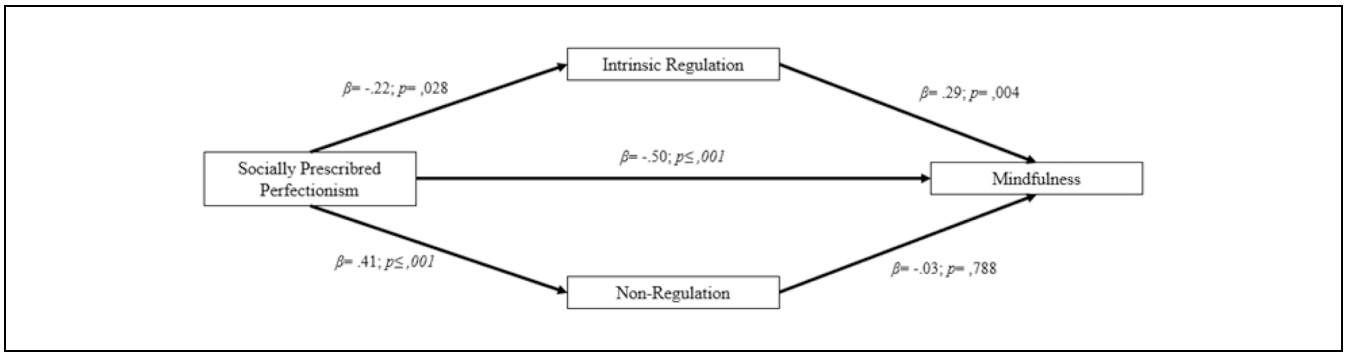

Figure 3. Parallel mediation model of socially prescribed perfectionism and mindfulness with intrinsic regulation and non-regulation as mediators.

check for a significant direct effect of SPP on Mindfulness, which is present ($\beta = -.58$; $p \leqslant .001$). Additionally, a direct effect of PAO is also present ($\beta = -.25$; $p = .050$).

SPP had a significant effect on intrinsic regulation ($\beta = -.23$; $p = .009$), and intrinsic regulation had an effect on mindfulness ($\beta = .30$; $p \leqslant .001$). The absolute value of the direct effect of SPP on mindfulness ($\beta = -.51$; $p \leqslant .001$) is lower than the total effect, confirming intrinsic regulation as a possible mediator in this relationship.

The effect of SPP on integrated regulation is significant ($\beta = -.31$; $p = .002$), but its effect on Mindfulness is not ($\beta = .16$; $p = .067$), so integrated regulation was not considered for mediation.

While the effect of SPP on introjected regulation is significant ($\beta = .30$; $p = .037$), the same does not hold true for the effect of introjected regulation on Mindfulness ($\beta = .10$; $p = .269$). Therefore, this factor is not eligible for the mediation model.

External regulation also does not meet the requirements for mediation, as the effect of SPP on it is not significant ($\beta = .16$; $p = .128$).

SPP had a significant effect on non-regulation ($\beta = .41$; $p \leqslant .001$), which also occurred between amotivation and Mindfulness ($\beta = -.19$; $p = .046$). Additionally, the direct effect of SPP on Mindfulness ($\beta = -.50$; $p \leqslant .001$) is lower than the total effect, making this factor a possible mediator of this relationship.

Although Self-Oriented Perfectionism (SOP) had a significant direct effect on Mindfulness, it did not have a significant effect on intrinsic regulation ($p = .942$), integrated regulation ($p = .689$), external regulation ($p = .377$) or non-regulation ($p = .632$). While the effect of SOP on introjected regulation was significant ($\beta = .31$; $p = .002$), introjected regulation did not have a significant effect on mindfulness ($\beta \leqslant -.01$; $p = .956$). Therefore, SOP does not fit into the current mediation model.

The mediation model of SPP on Mindfulness is shown in Figure 3. In this model, intrinsic regulation revealed a significant mediating effect, while the effect of amotivation was not significant. The index of mediation in this model is $-.08$.

Discussion

The correlational analysis between mindfulness and perfectionism partially confirmed previous research. Flett et al. (2021) asserted that perfectionism is antithetical to mindfulness, which is corroborated in this study when considering both general trait perfectionism and maladaptive/clinical perfectionism. Additionally, self-oriented perfectionism showed a markedly weaker correlation than the other factors of the Hewitt and Flett Multidimensional Perfectionism Scale (HMPS), and personal standards were not significantly correlated with mindfulness, aligning with Flett et al. (2021). These findings suggest that mindfulness may serve as a protective factor against maladaptive aspects of perfectionism.

As hypothesised, motivational styles were effective at mediating the relationship between perfectionism and mindfulness, even though this effect is considerably small. Despite this finding, it was impossible to formulate the proposed parallel mediation model. This may be due to the theoretical formulation of motivation in SDT, as each form of motivation is not independent of the others (e.g., strong amotivation implies a lack of intrinsic motivation), so a single mediating effect may be 'dispersed' across multiple mediators when considered simultaneously. Despite this finding, artificially dissecting this spectrum, from a theoretical standpoint, provides very little advantage. Despite this, these results raise some concerns about how these constructs are measured.

In addition to confirming the presence of a mediating effect through motivation, intrinsic motivation appears to have the best validity among the considered mediators. This may indicate that the protective effect of mindfulness on clinical perfectionism stems from an increase in intrinsic motivation rather than a reduction in

amotivation. This makes sense from a theoretical perspective, as certain elements of mindfulness, especially staying in the present, relate to intrinsic forms of motivation (Donald et al., 2020), characterised by considering the task as a reward in and of itself, leaving little room for external/future rewards (Ryan & Deci, 2017). Additionally, the lack of mediation found between SOP and mindfulness, despite the presence of a direct effect, is worthy of note, as it could be indicative of a key difference between SOP and SPP, perhaps indicating that perfectionist with high SOP do often feel motivated towards achieving their goals, which could explain the inconsistencies found between measures of perfectionist strivings and positives outcomes (Stoeber et al., 2018). Future studies could expand on these results by introducing other variables related to motivation, such as exhaustion and burnout.

The fact that both CoM and SPP showed identical mediation patterns could be indicative of that these constructs, when considered in relation to mindfulness, are more representative of their higher-order factors (perfectionistic concerns and strivings, respectively), rather than representing the particular characteristics of their conception of perfectionism. Alternatively, it is possible that these two constructs might complement each other in representing how a perfectionist deviates from the mindful mindset, as rather than being in the present, the perfectionist will either concern themselves with self-evaluation during the task (CoM), or with others' evaluation of their performance (SPP).

Conclusions

This study expanded and corroborated the literature that establishes perfectionistic concerns as a motivational profile marked by extrinsic motivations and mindfulness as a profile of intrinsic motivations.

Following this line of investigation, the present study proposed a unifying model by relying on the fact that mindfulness and perfectionistic concerns manifest in opposing motivational profiles to explain their opposite relationship. Thus, intrinsic motivation emerged as the best mediator between the two constructs. The fact that this mediation is better explained by intrinsic motivation and not by extrinsic motivation or amotivation may clarify not only the differences between mindfulness and perfectionism but also establish commonalities. Although clinical perfectionism is a risk factor for burnout (Hill & Curran, 2016), perfectionists are usually motivated individuals, and how extrinsic this motivation is indicates how detrimental this perfectionism is. Mindfulness is mainly associated with intrinsic forms of motivation, meaning it is possible to be a perfectionist and have high levels of mindfulness, but a clinical perfectionist is unlikely to exhibit this profile.

Currently, despite the existence of mindfulness-based interventions that show some efficacy in reducing clinical perfectionism (e.g., James & Rimes, 2018), and evidence showing that MBIs can affect motivation (Oberleiter et al., 2022), no intervention has tested whether the increase in intrinsic motivation is one of the mechanisms responsible for their effectiveness. The second phase of this study seeks to investigate this factor.

Study 2

Hypotheses

H1: A mindfulness-based intervention will reduce perfectionist concerns but will not have a significant effect on perfectionistic efforts.

H2: The intervention will increase autonomous forms of motivation (intrinsic and integrated regulation) and reduce controlled forms of motivation (external and introjected regulation) and amotivation.

Method

Participants. As mentioned in phase one, 93 university students (mean age = 24.37; SD = 7.42, 74.2% female, 81.72% Portuguese) completed an assessment battery. These were all invited to participate in a mindfulness-based intervention at the end of the questionnaire. After accepting the invitation, participants had to score over 22 on the Concern over Mistakes subscale on Frost's Multidimensional Perfectionism Scale (Frost et al., 1990) or over 49 on the SPP factor of the Multidimensional Perfectionism Scale (Hewitt & Flett, 1991), while simultaneously not showing significant symptoms of depression, to be eligible (n = 19). There were six dropouts prior or during the intervention (N = 13). Participants who accepted the invite but were ineligible or withdrew before the programme started were invited to join the control group (N = 8).

In order to reduce potential risk to participants, those who showed significant depression symptomology (collected during phase 1) were ineligible for participation, as MBCT is not intended for those who are currently suffering from a depressive disorder. Additionally, there was a 'session 0', meant to explain how the following intervention would be administered, encouraging the participants to ask questions, and reminding them that they were allowed to withdraw their consent at any point.

Measures. The same measures that were used in study 1 were employed for the current study. The demographic questionnaire was removed at post-test and follow-up.

Data Collection and Analysis. Data was collected at three time-points. Questionnaire scores from phase 1 of the study were re-purposed, becoming the base score (T1) for the intervention participants. After the intervention (T2), an identical protocol, without the demographic questionnaire, was sent out via e-mail to each participant, and once again at a 5-week follow-up (T3). Once the data was paired for all participants, all e-mails and identifying codes were deleted to preserve patient confidentiality.

All data was analysed in SPSS v.29. It was not possible to assure the sample's normality and, as such, non-parametric tests were employed. Due to this fact, it was not possible to calculate the interaction effect between the Time and Group variables.

Intervention Layout. The current intervention is based on a Mindfulness-Based Cognitive Therapy (MBCT) intervention modified by James and Rimes (2018) and was conducted at University of Algarve by a certified professional. Certain changes had to be implemented to adapt the intervention, originally designed for relapse prevention in depression (Kabat-Zinn, 2003), to focus on perfectionism.

In the first 3 weeks of the programme, the protocol remained mostly unchanged, with depression-related content being removed from both sessions and homework materials. In week 4, the psychoeducation content on depression was modified to address clinical perfectionism, differentiating between common understandings of perfectionistic efforts and clinical perfectionism. This involved using a list of statements related to clinical perfectionism based on the Almost Perfect Scale (Slaney et al., 2001) and replacing the original programme's definition of depression with the cognitive-behavioural definition of clinical perfectionism used by Shafran et al. (2002).

No content was removed from session 5, but the content on approaching experience was expanded to address the fight/flight response while framing it within the schema of perfectionism introduced in the previous week. This aimed to explain how both of these responses 'feed' the perfectionistic cycle and how mindfulness meditation can provide a third way of responding: staying with the feelings that arise as a result of perfectionism.

Week 6 underwent the most significant changes, introducing a self-compassion module and moving content related to identifying relapse signs to the following week. These changes were partly influenced by the precedent set when they were implemented by James and Rimes (2018). Including this content was also considered to be beneficial due to the fact that self-compassion is strongly related to mindfulness and is a well-established mediator between perfectionism and well-being (Stoeber et al., 2020), so this change was kept.

In weeks 7 and 8, materials related to the relationship between activities and mood were adapted to emphasise the balance between pleasurable activities, mastery activities, and obligations. This adjustment was made because clinical perfectionists often have a high concern for the appearance of mastery rather than mastery itself, leading them to engage in activities that result in exhaustion and do not bring benefits (Chang et al., 2020). A prevention plan focused on early signs of perfectionism was also developed.

Results

Descriptive Statistics. Table 2 provides a summary of descriptive statistics for all relevant variables at T1, T2 and T3, divided by groups. None of the differences between groups were statistically significant pre-intervention.

Between-Group Differences. Pre-intervention, no variable showed significant differences between groups. Table 3 contains descriptive statistics for inter-group differences both post-intervention and at follow-up. Post-intervention, only the perfectionism variables PS and General Perfectionism (FMPS) were statistically different between the intervention and control groups, differences that persisted at follow-up, while CoM became significantly lower in the intervention group only at follow-up.

No mindfulness or motivation variable showed significant differences between groups, either post-intervention or at follow-up.

Within-Group Differences. Descriptive statistics for intra-group differences are summarised in Table 4. In the intervention group, all perfectionism variables showed significant changes across time, while conversely, no motivation variable showed statistically significant temporal changes. The mindfulness variables Nonjudging of Experience, Nonreactivity to Inner Experience and Mindfulness showed significant changes across time points, while Observing, Describing, and Acting with Awareness did not exhibit these differences.

In the control group, no perfectionism variable showed temporal changes, while only one mindfulness and one motivation variable showed temporal changes, Describing, and Introjected Regulation, respectively.

The present results were insufficient to reasonably establish a possible mediation model, and, as such, this was not tested.

Table 2. Descriptive Statistics of Perfectionism, Mindfulness and Motivation Variables at All Time Points for the Experimental and Control Groups.

	Intervention group ($N = 13$)			Control group ($N = 8$)		
	Pre-intervention	Post-intervention	Follow-up	Pre-intervention	Post-intervention	Follow-up
Measure	*M* (*SD*)	*M* (*SD*)	*M* (*SD*)	*M* (*SD*)	*M* (*SD*)	*M* (*SD*)
Perfectionism						
Personal standards	23.77 (5.05)	21.08 (4.13)	20.08 (4.35)	26.75 (4.80)	26.88 (6.22)	26.25 (5.87)
Concern over mistakes	28.54 (6.88)	21.38 (7.90)	20.92 (6.71)	31.50 (8.48)	29.12 (8.72)	29.25 (8.55)
FMPS	52.31 (10.21)	42.46 (10.14)	41.00 (9.38)	58.25 (10.87)	56.00 (12.60)	55.50 (11.48)
Self-oriented perfectionism	85.62 (17.85)	71.15 (18.41)	68.00 (17.51)	85.87 (19.64)	87.12 (16.40)	82.00 (19.03)
Socially prescribed perfectionism	56.46 (13.97)	50.69 (12.13)	50.15 (12.49)	54.12 (8.46)	55.25 (12.84)	55.62 (10.39)
HMPS	156.77 (25.26)	135.54 (24.37)	133.00 (23.60)	153.38 (24.50)	157.50 (25.68)	153.62 (23.89)
Mindfulness						
Observe	25.77 (3.42)	28.46 (4.03)	29.00 (3.31)	26.12 (6.71)	26.38 (6.46)	27.75 (4.06)
Describe	25.46 (3.31)	29.00 (7.04)	30.54 (7.56)	27.50 (3.62)	30.62 (6.14)	32.12 (6.29)
Act with awareness	22.08 (4.54)	23.54 (5.71)	24.15 (6.02)	22.50 (6.44)	25.25 (7.13)	24.25 (7.44)
Nonjudgement	21.69 (6.13)	27.77 (4.32)	29.00 (4.91)	23.62 (7.61)	28.38 (7.54)	26.50 (6.32)
Nonreactivity	19.69 (2.59)	22.54 (2.60)	23.00 (3.78)	22.88 (5.72)	23.75 (3.99)	23.00 (4.69)
FFMQ	114.69 (12.62)	131.31 (16.02)	135.69 (17.81)	122.62 (20.49)	134.38 (19.64)	133.62 (14.82)
Motivation/regulation						
Amotivation	10.85 (6.64)	10.85 (6.23)	10.00 (5.69)	12.75 (8.26)	13.00 (7.62)	14.12 (7.99)
Extrinsic	9.31 (3.47)	8.69 (4.21)	8.77 (4.32)	9.25 (2.76)	8.88 (4.05)	8.75 (3.92)
Introjected	20.15 (5.86)	19.38 (6.73)	19.00 (8.66)	27.25 (4.33)	24.25 (4.50)	24.50 (4.98)
Integrated	18.92 (6.02)	21.62 (3.73)	21.15 (4.70)	19.88 (4.26)	21.25 (5.57)	20.50 (4.20)
Intrinsic	13.08 (5.41)	12.61 (4.77)	13.15 (5.10)	11.62 (5.24)	12.38 (5.53)	12.88 (5.22)

Table 3. Test Statistics for Significant Differences Between the Intervention and Control Groups at Post-Intervention and Follow-Up.

	Post-intervention			Follow-up		
Measure	*U*	*Z*	Sig.	*U*	*Z*	Sig.
Perfectionism						
PS	113.00	−2.19	.029	111.50	−2.29	.022
CoM	117.00	−1.89	.059	112.00	−2.25	.024
FMPS	109.00	−2.47	.014	106.00	−2.68	.007
SOP	116.50	−1.92	.055	123.50	−1.41	.158
SPP	130.50	−0.91	.365	129.50	−0.98	.328
HMPS	119.00	−1.74	.082	117.00	−1.88	.060
Mindfulness						
Observe	79.50	−0.62	.534	79.00	−0.66	.513
Describe	140.00	−0.22	.827	140.00	−0.22	.927
Act	136.00	−0.51	.611	141.50	−0.11	.913
Nonjudgement	136.00	−0.51	.609	75.50	−0.91	.362
Nonreactivity	134.00	−0.66	.511	142.00	−0.07	.942
FFMQ	130.50	−0.91	.364	79.50	−0.62	.538
Motivation/Regulation						
Amotivation	138.50	−0.34	.730	131.00	−0.90	.365
Extrinsic	140.50	−0.18	.856	141.50	−0.11	.913
Introjected	120.00	−1.67	.094	125.50	−1.27	.203
Integrated	142.00	−0.07	.942	79.50	−0.62	.533
Intrinsic	86.50	−0.11	.913	85.00	−0.22	.827

Note. *U* = Mann-Whitney's *U*; *Z* = test statistic.

Table 4. Test Statistics for Within-Group Differences Between Timepoints for Both the Intervention and Control Group.

	Intervention group ($N = 13$)			Control group ($N = 8$)		
Measure	Chi^2	*Df*	Sig.	Chi^2	*Df*	Sig.
Perfectionism						
PS	8.91	2	.012	0.214	2	.898
CoM	12.16	2	.002	2.60	2	.273
FMPS	14.16	2	<.001	0.25	2	.882
SOP	9.76	2	.008	1.00	2	.607
SPP	8.04	2	.018	0.00	2	1.000
HMPS	9.38	2	.009	0.06	2	.968
Mindfulness						
Observe	5.17	2	.076	0.52	2	.772
Describe	5.61	2	.061	6.67	2	.036
Act	3.17	2	.205	0.06	2	.968
Nonjudgement	12.04	2	.002	5.59	2	.061
Nonreactivity	14.98	2	<.001	0.58	2	.748
FFMQ	15.85	2	<.001	4.32	2	.115
Motivation/Regulation						
Amotivation	1.31	2	.519	1.24	2	.538
Extrinsic	2.98	2	.226	1.41	2	.495
Introjected	0.00	2	1.000	7.72	2	.021
Integrated	6.50	2	.039	0.50	2	.779
Intrinsic	2.93	2	.231	2.14	2	.343

Discussion

The present study aimed to replicate previous results in mindfulness-based interventions and, simultaneously, introduce a new variable (motivation) to explore a possible mechanism responsible for these changes.

Results regarding the effectiveness of the intervention revealed its efficacy when considering only significant changes within the intervention group. However, when compared to the control group, this intervention showed significantly reduced efficacy. These results may be attributable to the small sample size, limiting the study's power. It is important to note that, despite non-significant differences in mindfulness between groups, the intervention group initially had lower mindfulness levels than the control group and the reverse was true at follow-up. The absence of differences may be partly explained by initial differences in mindfulness levels, supported by the results related to within-group differences in mindfulness scores. Regardless of the reason, it is important to consider the fact that both perfectionist strivings and concerns were reduced as post-intervention, which is consistent with previous meta-analytic data on perfectionism interventions (Suh et al., 2019).

Perhaps the most surprising result of the intervention lies in its ineffectiveness in changing motivation levels in the intervention group, with only integrated regulation being reduced. Although the intervention was not designed to alter participants' motivation, previous studies suggest that mindfulness interventions can increase intrinsic motivation (Oberleiter et al., 2022). Considering that integrated regulation is the most intrinsic expression of external motivation (Ryan & Deci, 2017), and clinical perfectionists tend to regulate themselves through external motivation and demotivation (Stoeber et al., 2018), these results may express the participants' limited ability to rely on intrinsic motivation to regulate their behaviour, but further studies are needed to fully understand these results.

When taken as a whole, these results could be indicative of why perfectionists tend to resist mindfulness interventions. It could be the case that perfectionists are open to change certain unhealthy patterns associated with their perfectionism, hence why changes in perfectionism were present, but their main motivator tends to be extrinsic, like, for example, giving the appearance of competence (Chang et al., 2020), rather than obtaining fulfilment from the task. As such, perfectionists in mindfulness interventions find themselves stuck in wanting to change but not wanting to engage with the tools that facilitate change. This could have implications for how clinicians utilise the mindfulness approach with perfectionists, either through prolonged psychoeducation about perfectionism as a symptom, or through deeper explanations of the benefits of these interventions. Although these results are not conclusive, they seem to indicate that perfectionists are not inherently resistant to mindfulness content, only hesitant to engage with it.

Conclusion

This research expands the available knowledge on interventions aimed at reducing perfectionism, particularly mindfulness-based interventions (MBIs) and support their efficacy. The main focus of this study was to attempt to bridge the gap between theoretical assumptions of MBIs on perfectionism and current empirical findings. Although some progress was made in this regard, it is clear that, although effective, MBIs are currently unable to provide a unique alternative to CBT in treating perfectionism.

The lack of observed motivational changes, when considered alongside the mediating role of motivation in the relationship between mindfulness and perfectionism, suggests a potential direction for future interventions, although the small mediating effect indicates that this new variable is most likely insufficient, by itself, in resolving the current obstacles that MBIs face.

Limitations and Future Directions

Participants could not be randomly assigned to groups, leading to non-homogeneous participant distribution (e.g., due to eligibility criteria not including elevated levels of depressive symptoms in the control group). This limitation restricts inferences that can be drawn from the comparison between groups. Additionally, this study is limited by its small size, which, as was mentioned, reduces its statistical power. Due to this fact, generalising these results should be done with caution. Still, the cross-sectional data, which served as a guide when generating hypotheses in the intervention study, suggested that changes in mindfulness should have been accompanied by changes in motivation. Future studies should investigate why no such effect was found.

The present study was also limited by the fact that only one application of the programme was done, meaning that certain variables could not be controlled for. Although the presence of a control group buffers this concern, it is still possible that certain intervention elements interacted with the reality of the participant's life, or even the opposite, leading to changes in results. For example, it could be the case that a certain week of the intervention coincided with a week where the participants had a high number of deadlines/exams, leading them to not engage with the home materials as much. Once again, a bigger sample could resolve this issue.

Future interventions could enhance the current design by introducing specific modules for increasing intrinsic motivation and reducing amotivation. One such way clinicians could utilise mindfulness to influence change in motivation could be by developing content about mastery activities, contrasting it with the appearance of mastery or other goal-related activities that do not constitute progress, such as creating the appearance of progress. It is also recommended that researchers explore alternative methodologies and intervention designs, such as using mindfulness-based programmes other than MBCT, such as ACT, or less formal interventions requiring less investment from the participants.

Acknowledgements

The authors declare that there are no outstanding acknowledgements to report.

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Ethical Considerations

This study was approved by the Ethics Committee of University of Algarve (Ethics Code: 2022/41692) on December 22nd, 2022. All participants provided informed consent prior to enrolment in the study. This research was conducted ethically in accordance with the World Medical Association Declaration of Helsinki.

Funding

This research was partially funded by the FCT—Fundação para a Ciência e a Tecnologia, grant number UIDB/PSI/04345/2020.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Data Availability Statement

The complete raw data files generated for the current study are available in the Figshare repository at the following link: https://doi.org/10.6084/m9.figshare.26029390.

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